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ABSTRACT

This edition, 22nd of a series begun in 1964, provides revisions of projections shown in "Projections of Education Statistics to 2002," and includes statistics on elementary schools, secondary schools, and institutions of higher education at the national level. Included are projections for enrollment, graduates, classroom teachers, and expenditures to the year 2003. These projections reflect the 1990 census and assumptions of a higher fertility rate and net immigration, and a lower mortality rate than previously projected. A methodology section describes models and assumptions used to develop the projections, which are based on an age-specific enrollment rate model, exponential smoothing models, and econometric models. Most projections include three alternatives, based on different assumptions about growth paths. The first set of alternatives in each table is deemed to be the most likely. Total public and private elementary and secondary enrollment is projected to increase to 54.2 million over the projection period. Enrollments in public and private institutions of higher education are projected to increase over the projection period. One chart, 60 figures, and 44 tables present projections. Appendixes include: (1) projection methodology and 23 tables; (2) 11 supplementary tables; (3) data sources; and (4) a glossary. (SLD)

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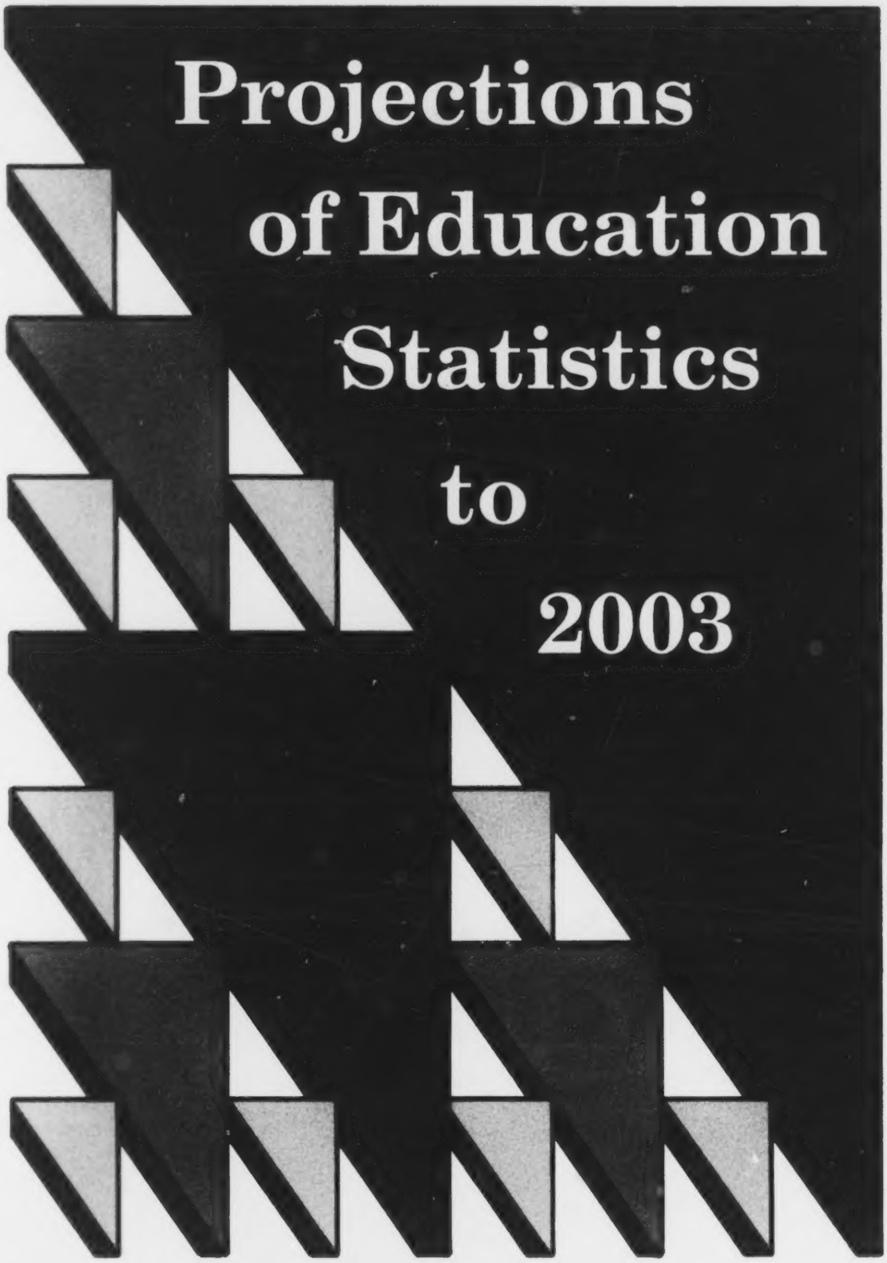

Projections of Education Statistics to 2003

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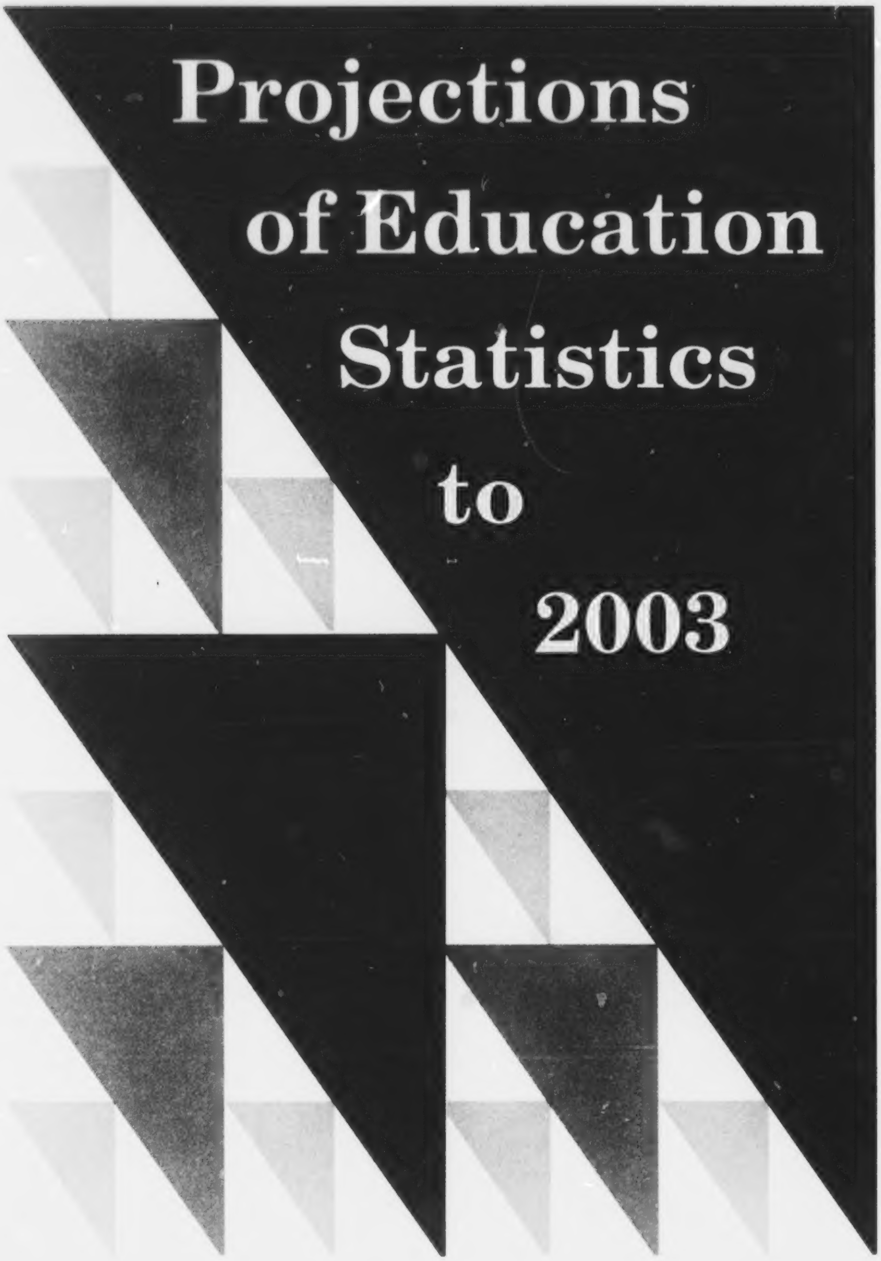

Projections of Education Statistics to 2003

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December 1992

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Foreword

This edition of *Projections of Education Statistics to 2003* is the 22nd report in a series begun in 1964. This report provides revisions of projections shown in *Projections of Education Statistics to 2002* and includes statistics on elementary and secondary schools and institutions of higher education at the national level. Included are projections for enrollment, graduates, classroom teachers, and expenditures to the year 2003.

The projections presented in this report reflect the 1990 census. The revised population projections developed by the Bureau of the Census reflect the incorporation of the 1990 and 1991 population estimates and assumptions for a higher fertility rate and net immigration and a lower mortality rate.

The report also contains a methodology section describing models and assumptions used to develop the national projections. The projections are based on an age-specific enrollment rate model, exponential smoothing models, and econometric models. The enrollment model uses population estimates and projections from the Bureau of the Census. The exponential smoothing models are based on the mathematical projection of past data patterns into the future. The econometric models use projections of exogenous variables from DRI/McGraw-Hill, an economic forecasting service. Therefore, assumptions regarding the population and the economy are the key assumptions underlying the projections of education statistics.

Most of the projections include three alternatives, based on different assumptions about growth paths. Although the first alternative set of projections (middle alternative) appearing in each table is deemed to represent the most likely projections, the low and high alternatives provide a reasonable range of outcomes.

A summary of these projections is available in a pocket-sized folder, *Pocket Projections 2003*. In the forecast summary, key demographic and economic assumptions appear in chart 1 and selected education statistics are shown in figure 1.

Roger A. Herriot, Associate Commissioner
Statistical Standards and Methodology Division
December 1992

Acknowledgments

Projections of Education Statistics to 2003 was produced by the National Center for Education Statistics in the Statistical Standards and Methodology Division under the general direction of Roger A. Herriot, Associate Commissioner, and Theodore H. Drews, Chief, Projections and Special Programs Branch. The report was prepared by Debra E. Gerald, Mathematical Statistician, and William J. Hussar, Financial Economist.

Debra E. Gerald was responsible for the overall production of the report and prepared the projections of the following: elementary and secondary enrollment (chapter 1); higher education enrollment (chapter 2); high school graduates (chapter 3); earned degrees conferred (chapter 4); and classroom teachers (chapter 5). In addition, she prepared the appendixes explaining the methodologies used to develop these projections and the data sources. William J. Hussar prepared the projections of expenditures of public elementary and secondary schools, including public school teacher salaries (chapter 6) and expenditures of institutions of higher education (chapter 7). Also, he prepared the appendixes explaining the methodologies used to obtain these projections and the glossary.

The technical review was done by Robert S. Burton of the National Center for Education Statistics. Valuable assistance was also provided by the following reviewers: Gregory Spencer of the Bureau of the Census; Vance Grant of the Office of the Deputy Assistant Secretary for Operations, Office of Educational Research and Improvement; and John Burkett, Michael Cohen, William J. Fowler, Kristin B. Keough, Frank H. Johnson, Frank B. Morgan, Carl M. Schmitt, and William C. Sonnenberg of the National Center for Education Statistics. Computer support was provided by Clevie E. Gladney of the National Center for Education Statistics.

Several individuals outside the National Center for Education Statistics also contributed to the development of *Projections of Education Statistics to 2003*. Jeannette Bernardo of the firm HCR prepared the charts. The editing of the manuscript was done by Kathryn Perkinson and the cover was designed by Philip Carr, Office of the Deputy Assistant Secretary for Operations, Office of Educational Research and Improvement. System support was provided by Jerry Fairbanks of the Government Printing Office.

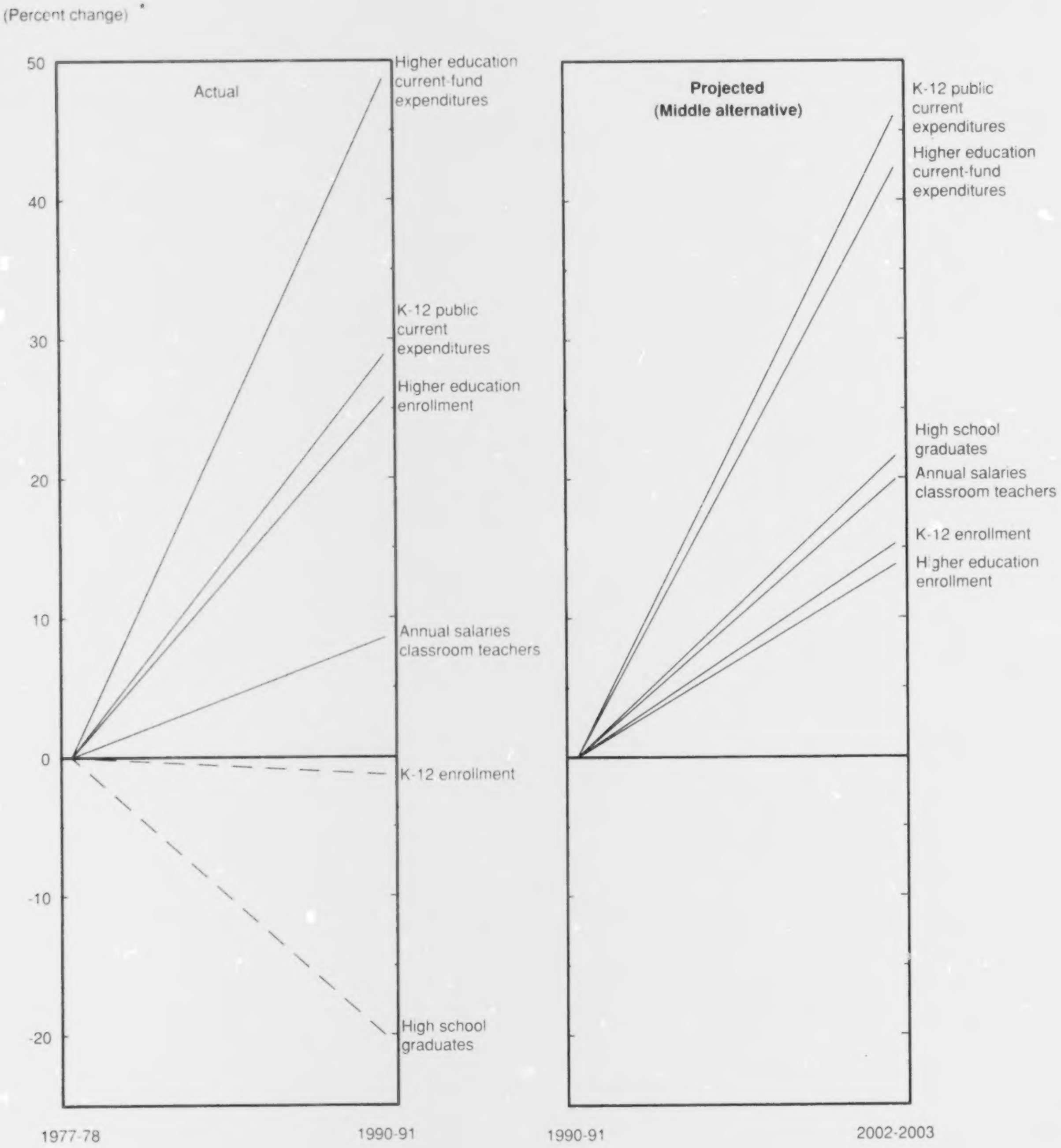
Forecast Summary

Chart 1.—Summary of forecast assumptions

Variable	Middle alternative	Low alternative	High alternative
Demographic Assumptions			
Population	Projections are consistent with the Census Bureau middle series, which assume a fertility rate of 2.1 births by the year 2050, a net immigration of 880,000 per year, and a further reduction of the mortality rate.	Same as middle alternative	Same as middle alternative
18-24 year-old population	Average annual decline of 1.4% to 1996; average annual growth rate of 2.3% through 2003.	Same as middle alternative	Same as middle alternative
25-29 year-old population	Average annual decline of 1.5%	Same as middle alternative	Same as middle alternative
30-34 year-old population	Average annual decline of 1.2%	Same as middle alternative	Same as middle alternative
35-44 year-old population	Average annual growth rate of 0.8%	Same as middle alternative	Same as middle alternative
Elementary Enrollment	Average annual growth rate of 0.9%	Same as middle alternative	Same as middle alternative
Secondary Enrollment	Average annual growth rate of 1.8%	Same as middle alternative	Same as middle alternative
Undergraduate Enrollment	Average annual growth rate of 1.1%	Average annual growth rate of 0.6%	Average annual growth rate of 1.4%
Graduate Enrollment	Average annual growth rate of 0.8%	Average annual growth rate of 0.1%	Average annual growth rate of 1.2%
First-professional Enrollment	Average annual growth rate of 0.9%	Average annual growth rate of 0.2%	Average annual growth rate of 1.3%
Full-time-equivalent Enrollment	Average annual growth rate of 1.2%	Average annual growth rate of 0.6%	Average annual growth rate of 1.5%
Economic Assumptions			
Disposable Income per Capita in Constant Dollars	Annual percent changes range between 1.0% and 2.3% with an annual compound growth rate of 1.4%.	Annual percent changes range between 0.2% and 2.8% with an annual compound growth rate of 1.3%.	Annual percent changes range between 1.2% and 2.4% with an annual compound growth rate of 1.6%.
Education Revenue Receipts from State Sources per Capita in Constant Dollars	Annual percent changes range between 1.7% and 2.9% with an annual compound growth rate of 2.4%.	Annual percent changes range between –1.5% and 2.4% with an annual compound growth rate of 0.6%.	Annual percent changes range between 2.2% and 5.8% with an annual compound growth rate of 3.5%.
Inflation Rate	Inflation rate ranges between 3.4% and 4.5% with an annual compound rate of 3.9%.	Inflation rate ranges between 3.1% and 6.4% with an annual compound rate of 5.0%.	Inflation rate ranges between 2.9% and 3.9% with an annual compound rate of 3.2%.
Personal Taxes and Nontax Receipts to State and Local Governments per Capita in Constant Dollars	Annual percent changes range between 2.1% and 4.3% with an annual compound growth rate of 3.1%.	Annual percent changes range between 2.1% and 4.5% with an annual compound growth rate of 3.0%.	Annual percent changes range between 2.6% and 4.9% with an annual compound growth rate of 3.5%.
Indirect Business Taxes and Tax Accruals (Excluding Property Taxes) to State and Local Governments per Capita in Constant Dollars	Annual percent changes range between 1.3% and 5.1% with an annual compound growth rate of 2.3%.	Annual percent changes range between 1.1% and 5.5% with an annual compound growth rate of 2.0%.	Annual percent changes range between 1.6% and 5.2% with an annual compound growth rate of 2.7%.
Unemployment Rate (Ages 16 to 19)	Remains between 19.2% and 20.2%.	Same as middle alternative	Same as middle alternative

Figure 1

Percent change in selected education statistics: 1977-78 to 1990-91 and 1990-91 to 2002-2003



*Percent change figures do not imply that the rate of increase or decrease is constant.

Highlights

Enrollment

- **Total public and private elementary and secondary enrollment is projected to increase to 54.2 million over the projection period**. From 1978 to 1984, total enrollment in public and private elementary and secondary schools decreased from 47.6 million to 44.9 million, a decrease of 6 percent. After 1984, total enrollment reversed its decline and increased to 47.0 million in 1991, an increase of 5 percent. Total enrollment is projected to continue to increase to 51.6 million by 1996, surpassing the peak level of 51.3 million attained in 1971. Total enrollment is projected to increase further to 54.2 million by the year 2003, an increase of 15 percent from 1991 (table 1).

- **Over the projection period, enrollment in grades K–8 and grades 9–12 will continue to increase**. Between 1978 and 1984, enrollment in grades K–8 fell from 32.2 million to 31.2 million, a decrease of 3 percent. Then, this number increased to 34.4 million in 1991, an increase of 10 percent. Enrollment in grades K–8 is projected to increase to 38.5 million by the year 2003, an increase of 12 percent. Enrollment in grades 9–12 decreased from 15.4 million in 1978 to 12.5 million in 1990, a decrease of 19 percent. It then increased to 12.6 million in 1991. By the year 2003, enrollment in grades 9–12 is projected to continue to rise to 15.7 million, an increase of 25 percent (table 1).

- **Enrollment in institutions of higher education is projected to increase from an estimated 14.2 million in 1991 to 16.1 million by the year 2003**. Between 1978 and 1983, higher education enrollment increased from 11.3 million to 12.5 million, an increase of 11 percent. In 1984 and 1985, higher education enrollment dropped to 12.2 million. Then, it increased from 12.5 million in 1986 to an estimated 14.2 million in 1991, an increase of 13 percent from 1986. Higher education enrollment is projected to increase to 16.1 million by the year 2003, an increase of 14 percent from 1991. Under the low and high alternatives, higher education enrollment is projected to range between 15.1 million and 16.7 million by the year 2003 (table 3).

- **Women are expected to continue to be the majority of college students over the projection period**. Enrollment of women increased from 5.6 million in 1978 to an estimated 7.8 million in 1991, an increase of 38 percent. Under the middle alternative, this number is projected to increase to 8.7 million by the year 2003, an increase of 13 percent. Under the low and high alternatives, enrollment of women is projected to range between 8.3 million and 9.1 million by the year 2003. From 1978 to 1990, enrollment of men has fluctuated between 5.6 million and 6.2 million. In 1991, it was estimated at 6.4 million. Under the middle alternative, this number is projected to increase to 7.4 million by the year 2003, an increase of 15 percent. Under the low and high alternatives, enrollment of men is expected to range between 6.8 million and 7.7 million by the year 2003 (table 3).

- **Enrollments in public and private institutions of higher education are projected to increase over the projection period**. Enrollment in public institutions increased from 8.8 million in 1978 to an estimated 11.0 million in 1991, an increase of 26 percent. Under the middle alternative, public enrollment is expected to increase to 12.6 million by the year 2003, an increase of 14 percent. Under the low and high alternatives, public enrollment is expected to range between 11.8 million and 13.0 million by the year 2003. Enrollment in private institutions grew from 2.5 million in 1978 to an estimated 3.1 million in 1991, an increase of 26 percent. Under the middle alternative, private enrollment is projected to reach a high of 3.6 million by the year 2003, an increase of 14 percent. Under the low and high alternatives, private enrollment is projected to range between 3.3 million and 3.7 million by the year 2003 (table 3).

- **Undergraduate, graduate, and first-professional enrollments are projected to increase over the projection period**. Undergraduate enrollment increased from 9.7 million in 1978 to an estimated 12.2 million in 1991, an increase of 26 percent. Under the middle alternative, undergraduate enrollment is expected to increase to 13.9 million by the year 2003, an increase of 14 percent. Under the low and high alternatives, undergraduate enrollment is expected to range between 13.1 million and 14.4 million by the year 2003. Graduate enrollment increased from 1.3 million in 1978 to an estimated 1.7 million in 1991, an increase of 30 percent. Under the middle alternative, graduate enrollment is expected to rise to 1.9 million by the year 2003, an increase of 10 percent. Under the low and high alternatives, graduate enrollment is projected to range between 1.7 million and 2.0 million by the year 2003. First-professional enrollment increased from 257,000 in 1978 to an estimated 303,000 in 1991, an increase of 18 percent. Under the middle alternative, this number is projected to rise to 338,000 by the year 2003, an increase of 12 percent. Under the low and high alternatives, first-professional enrollment is expected to range between 310,000 and 353,000 by the year 2003 (tables 14, 17, and 20).

High School Graduates

- **The number of high school graduates is projected to increase by 2002–2003.** The number of high school graduates from public and private high schools decreased from 3.1 million in 1977–78 to 2.6 million in 1985–86. It then rose to 2.8 million in 1987–88. Next, it decreased to 2.5 million in 1990–91. Over the projection period, the number of graduates is expected to remain around 2.5 million a year through 1993–94. Thereafter, it is projected to rise to 3.0 million by 2002–2003 (table 26).

- **Graduates of both public and private high schools are projected to increase by 2002–2003.** The number of public high school graduates decreased from 2.3 million in 1990–91 to about 2.2 million by 1991–92. By 2002–2003, the number is projected to rise to 2.7 million. The number of private high school graduates, which were estimated at 247,000 in 1990–91, is projected to be 296,000 by 2002–2003 (table 26).

Earned Degrees Conferred

- **The number of bachelor's degrees is projected to rise to 1.3 million over the projection period.** Between 1977–78 and 1990–91, the number of bachelor's degrees increased from 921,000 to about 1,084,000. Under the middle alternative, this number is expected to increase to 1,303,000 by 2002–2003. Under the low and high alternatives, bachelor's degrees are projected to range between 1,224,000 and 1,351,000. The number of bachelor's degrees awarded to men declined from 487,000 in 1977–78 to 470,000 in 1980–81. Then, this number increased most years to about 498,000 in 1990–91. Under the middle alternative, this number is expected to fluctuate over most of the projection period and then increase to 607,000 by 2002–2003. Under the low and high alternatives, bachelor's degrees awarded to men are expected to range between 559,000 and 629,000. The number of bachelor's degrees awarded to women increased from 434,000 in 1977–78 to about 586,000 in 1990–91. Under the middle alternative, this number is expected to increase over the projection period to 696,000 by 2002–2003. Under the low and high alternatives, bachelor's degrees awarded to women are projected to range between 665,000 and 722,000 by 2002–2003 (table 28).

- **Women will continue to receive more master's degrees than those awarded to men over the projection period.** The number of master's degrees decreased from 312,000 in 1977–78 to 284,000 in 1983–84. Since then, master's degrees have increased to about 337,000 in 1990–91. Under the middle alternative, this trend is projected to continue, reaching 365,000 by 2002–2003. Under the low and high alternatives, the number of master's degrees is projected to range between 325,000 and 387,000. Under the middle alternative, the number of degrees awarded to men is projected to increase from 157,000 in 1990–91 to 179,000 in 2002–2003. Under the low and high alternatives, master's degrees awarded to men are projected to range between 149,000 and 191,000. Under the middle alternative, the number of master's degrees awarded to women is expected to increase from 180,000 in 1990–91 to 186,000 by 2002–2003. Under the low and high alternatives, master's degrees awarded to women are expected to range between 176,000 and 196,000 (table 29).

- **The number of doctor's degrees awarded to women is projected to increase over the projection period.** The number of doctor's degrees increased from 32,100 in 1977–78 to about 40,000 in 1990–91. Under the middle alternative, doctor's degrees are expected to increase to 41,800 by 2002–2003. Under the low and high alternatives, the number of doctor's degrees is projected to range between 37,100 and 43,700. Under the middle alternative, the number of doctor's degrees awarded to men is projected to decrease gradually from 25,000 in 1990–91 to 21,700 in 2002–2003. Under the low and high alternatives, doctor's degrees awarded to men are projected to range between 17,100 and 23,400. Under the middle alternative, the number of doctor's degrees awarded to women is expected to increase from 15,000 to 20,100 over the projection period. Under the low and high alternatives, doctor's degrees awarded to women are projected to range between 20,000 and 20,300 (table 30).

Classroom Teachers

- **The number of classroom teachers is projected to rise over the projection period.** Between 1978 and 1981, classroom teachers in public and private elementary and secondary schools decreased from 2.48 million to 2.44 million. Then, this number increased to about 2.79 million in 1991. Under the middle alternative, this number is expected to increase to 3.35 million by the year 2003. Under the low and high alternatives, the number of classroom teachers is expected to range between 3.25 million and 3.44 million by the year 2003 (table 32).

- **Both elementary and secondary teachers are projected to increase over the projection period.** Elementary classroom teachers increased from 1.38 million in 1978 to about 1.70 million in 1991. Under the middle alternative, this number is projected to decrease to 1.68 million in 1992, before increasing to 1.97 million by the year 2003. Under the low and high alternatives, elementary teachers are projected to range between 1.90 million and 2.03 million by the year 2003. Secondary classroom teachers decreased from 1.10 million in 1978 to 1.04 million in 1981. Then this number increased to about 1.08 million in 1991. Under the middle alternative, secondary classroom teachers will increase to 1.38 million by the year 2003. Under the low and high alternatives, secondary teachers are projected to range between 1.35 million and 1.41 million (table 32).

- **Under the middle alternative, the pupil-teacher ratio in elementary and secondary schools is projected to rise and then fall over the projection period**. Since 1978, the pupil-teacher ratio in elementary schools has decreased from 20.9 to 18.4 in 1989. Then, the ratio increased to about 18.5 in 1991. Under the middle alternative, this ratio is projected to continue to increase to 19.0 in 1992, and then decline to 17.7 by the year 2003. Under the low and high alternatives, this ratio is expected to range between 17.2 and 18.3 by the year 2003. For secondary schools, the pupil-teacher ratio decreased from 17.1 in 1978 to 14.3 in 1990. It increased to an estimated 14.4 in 1991. Under the middle alternative, this ratio will fall slightly to 14.3 and hold steady through 1994. Then it will increase to 14.4 and remain there through 1997, before falling to 14.1 by the year 2003. Under the low and high alternatives, the pupil-teacher ratio in secondary schools is projected to range between 13.8 and 14.4 (table 33).

Expenditures

- **Current expenditures for public elementary and secondary schools are forecast to continue increasing through 2002–2003**. Between 1977–78 and 1991–92, current expenditures are estimated to have increased 32 percent in constant dollars. With the increasing enrollments projected for this period, this trend of increasing current expenditures is expected to continue. Under the middle alternative, a 38 percent increase is projected for the period from 1991–92 to 2002–2003. Under the low alternative, current expenditures are projected to increase by 27 percent; under the high alternative, current expenditures are projected to increase by 54 percent (table 34).

- **Increases in current expenditures per pupil are also forecast to continue increasing for the period 1991–92 to 2002–2003**. The period from 1977–78 until 1991–92 saw current expenditures per pupil in average daily attendance (ADA) increase an estimated 38 percent in constant dollars. Under the middle alternative, current expenditures per pupil are forecast to increase another 24 percent between 1991–92 and 2002–2003. Under the low and high alternatives, the increase in current expenditures is projected to range between 10 and 34 percent. Current expenditures per pupil are forecast to increase less rapidly than total current expenditures due to the increase projected for the number of pupils (table 34).

- **Further increases in teacher salaries are forecast**. After a period of declining salaries (teacher salaries in constant dollars fell 10 percent from 1977–78 to 1980–81), teacher salaries rose constantly from 1981–82 to 1989–90. During that time, teacher salaries in constant dollars grew an estimated 21 percent. With the present slowdown in the economy, teacher salaries have been estimated to have increased only 1 percent in real terms from 1989–90 to 1991–92. As the current trend of increasing enrollments continues and as the economy begins increasing again, it is forecast that teacher salaries will also begin increasing. Teacher salaries are projected to increase 20 percent between 1991–92 and 2002–2003 under the middle alternative. An 11 percent increase is projected under the low alternative and a 27 percent increase is projected under the high alternative (table 36).

- **Current-fund expenditures are projected to increase in both public and private institutions**. Current-fund expenditures in institutions of higher education rose 44 in constant dollars percent from 1977–78 to 1989–90. (1989–90 is the last year for which there are available data.) During that time, current-fund expenditures rose 38 percent in public institutions and 58 percent in private institutions. A further 47 percent increase is projected for the period from 1989–90 to 2002–2003 under the middle alternative (table 37).

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Introduction

Guide to This Edition

This edition of *Projections of Education Statistics to 2003* provides projections for key education statistics. This edition includes statistics on enrollment, graduates, classroom teachers, and expenditures in elementary and secondary schools and institutions of higher education. The tables, figures, and text contain data on enrollment, teachers, graduates, and expenditures for the past 14 years and projections to the year 2003. These projections reflect estimates and population projections based on the 1990 census. Appendix A describes the methodology and assumptions used to develop the projections. Appendix B contains tables of supplementary data. Data sources are presented in appendix C. Appendix D is a glossary of terms.

Exclusions

Some of the projections contained in previous editions of *Projections of Education Statistics* are not provided in this edition. The Schools and Staffing Survey (SASS) of the National Center for Education Statistics now provides data on teacher attrition and sources of teacher supply. Therefore, the previous practice of using various assumptions to develop projections of the demand for new hiring of classroom teachers has been discontinued, and the SASS data will be used for future analyses of this variable. However, data from SASS are presently available for only one time period and are thus an insufficient basis for projections. This does not affect the projections of total demand for classroom teachers, which are included.

Also excluded from this edition are projections of instructional faculty, higher education enrollment by race/ethnicity, and state projections of public elementary and secondary enrollment and public high school graduates. Projections of instructional faculty require the development of new time series from existing and new NCES data sources, and that development is not yet complete. Projections of higher education enrollment by race/ethnicity and projections of public school enrollment and public high school graduates by state cannot be included because the 1990 census-based population projections by race and by state, which are necessary to update these projections, are not yet available.

Limitations of Projections

Projections of time series usually differ from the reported data due to errors from many sources. This is because of the inherent nature of the statistical universe from which the basic data are obtained and the properties of projection methodologies, which depend on the validity of many assumptions. Therefore, alternative projections are shown for most statistical series to denote the uncertainty involved in making projections. These alternatives are not statistical confidence limits, but instead represent judgments made by the authors as to reasonable upper and lower bounds. Alternative projections are presented for higher education enrollment, classroom teachers, earned degrees conferred, and expenditures of public elementary and secondary schools and institutions of higher education.

Chapter 1

Elementary and Secondary Enrollment

Between 1991 and the year 2003, enrollment will increase in elementary and secondary schools. The primary reason for the increase is the rising number of annual births since 1977—sometimes referred to as the baby boom echo. Over the next 12 years, this surge of births will cause increases in the school-age populations (figures 2 and 3). In 1992 and beyond, increases in the 5- to 13-year-old population, which began in the mid-1980s, are expected to continue the growth in elementary enrollment. The increase in the 14- to 17-year-old population, which started in 1991, will continue the growth in secondary enrollment over the projection period.

Elementary and Secondary Enrollment

Reflecting the decline in the 5- to 17-year-old population, total enrollment in public and private elementary and secondary schools decreased from 47.6 million in 1978 to 44.9 million in 1984, a decrease of 6 percent (table 1 and figure 4). After reaching a low of 44.9 million in 1984, total enrollment reversed its downward trend in response to an increase in the 5- to 17-year-old population and rose to 47.0 million in 1991, an increase of 5 percent. Total enrollment is projected to continue to increase to 51.6 million in 1996, surpassing the peak level of 51.3 million attained in 1971. Total enrollment is projected to increase further to 54.2 million by the year 2003, an increase of 15 percent from 1991.

Enrollment, by Control of School

Enrollment in public elementary and secondary schools decreased from 42.6 million in 1978 to 39.2 million in 1984, a decrease of 8 percent (figure 5). Since then, enrollment in public schools has increased to 41.8 million in 1991, an increase of 7 percent. Enrollment in public schools is projected to increase to 48.3 million by the year 2003, an increase of 15 percent from 1991.

Since the mid-1970s, enrollment in private elementary and secondary schools has fluctuated between 5.0 million and 5.7 million. A sample survey of private schools conducted by NCES in 1991 estimated that 5.2 million students were enrolled in private elementary and secondary schools. Enrollment in private schools is projected to increase to around 6.0 million by the year 2003, an increase of 15 percent from 1991.

Projections of enrollments in public elementary and secondary schools are based on projected grade retention rates. The retention rates for grades 2 through 10 are all close to 100 percent. Rates for grade 6 to grade 7 and grade 8 to grade 9 are significantly over 100 percent. Traditionally, these are the grades in which large numbers of private elementary students transfer to public secondary schools. The retention rates for grades 11 to 12 are about 90 percent. The grade retention rates are assumed to be constant throughout the projection period.

Projections of private school enrollment were derived using public school enrollment data for 1991. The ratio of private school enrollment to public school enrollment was calculated for grades K–8 and grades 9–12. These ratios were held constant over the projection period and applied to projections of public school enrollment for grades K–8 and 9–12 to yield projections of private school enrollment. This method assumes that the future pattern in the trend of private school enrollment will be the same as that in public school enrollment. However, a number of factors could alter the assumption of constant ratios over the projection period. Because of the lack of consistent time series data on private school enrollment, it was assumed that the 1991 ratio would remain constant over time.

Enrollment, by Grade Group

Between 1978 and 1984, enrollment in grades K–8 fell from 32.2 million to 31.2 million, a decrease of 3 percent. Then, this number increased to 34.4 million in 1991, an increase of 10 percent. Enrollment in grades K–8 is projected to increase to 38.5 million by the year 2003, an increase of 12 percent. Enrollment in grades 9–12 decreased from 15.4 million in 1978 to 12.5 million in 1990, a decrease of 19 percent. It then increased to 12.6 million in 1991. By the year 2003, enrollment in grades 9–12 is projected to continue to rise to 15.7 million, an increase of 25 percent. Since enrollment rates for the school-age population are nearly 100 percent for elementary grades and junior-high grades and close to 90 percent for high school grades, the historical and projected patterns of decline and growth in enrollment in grades K–8 and grades 9–12 reflect changes in the sizes of the 5- to 13-year-old population and the 14- to 17-year-old population.

Enrollment by grade group in public elementary and secondary schools shows trends similar to those of total enrollment. Enrollment in grades K–8 of public schools decreased from 28.5 million in 1978 to 26.9 million in 1984, a decrease of 5 percent. It then increased to 30.4 million in 1991. Enrollment in grades K–8 of public schools is projected to increase to 34.0 million by the year 2003, an increase of 12 percent. Enrollment in grades 9–12 of public schools decreased from 14.1 million in 1978 to 11.3 million in 1990, a decrease of 20 percent. Then, it increased to 11.5 million in 1991. Thereafter, 9–12 enrollment is expected to increase to 14.3 million by the year 2003, an increase of 25 percent.

Enrollment by grade group in private elementary and secondary schools will show patterns similar to trends in enrollment in public schools over the projection period by virtue of the private school enrollment projection methodology, which assumes private school enrollment will reflect trends in public school enrollment. Enrollment in grades K–8 of private schools is projected to increase from 4.1 million in 1991 to 4.6 million by the year 2003, an increase of 12 percent. Enrollment in grades 9–12 of private schools is projected to increase from 1.1 million in 1991 to 1.4 million by the year 2003, an increase of 25 percent.

Enrollment, by Organizational Level

Enrollments may also be aggregated by the level of school attended by students. The reported enrollment in elementary schools is smaller than enrollment in kindergarten through grade 8 because it excludes enrollment in grades 7 and 8 in secondary schools. Enrollment in elementary schools decreased from 28.7 million in 1978 to 28.0 million in 1983, a decrease of 3 percent (table 2). This number increased by 13 percent to 31.5 million in 1991. Enrollment in elementary schools is expected to continue to increase to 35.0 million in the year 2001, before declining to 34.9 million by the year 2003, an increase of 11 percent from 1991. Enrollment in secondary schools, including 7th and 8th graders in secondary schools, decreased from 18.9 million in 1978 to 15.3 million in 1990, a decrease of 19 percent. Then, this number increased by 2 percent to 15.5 million in 1991. Enrollment in secondary schools is projected to rise to 19.4 million by the year 2003, an increase of 25 percent.

Figure 2
5 to 17-year-old population, with projections: 1978 to 2003

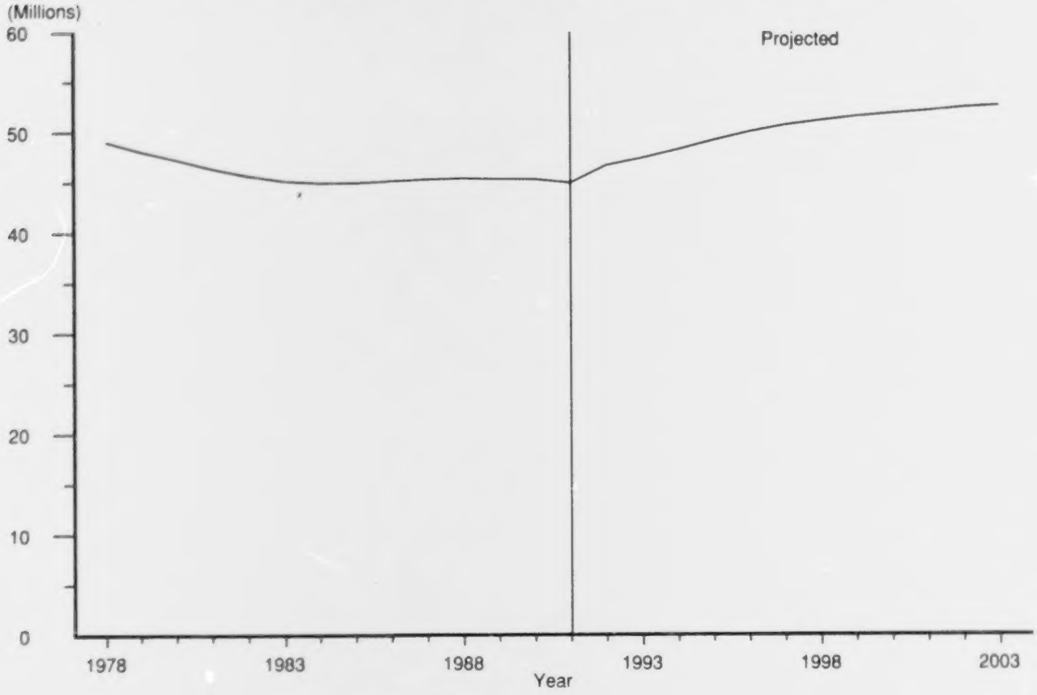

Figure 3
School-age populations, with projections: 1978 to 2003

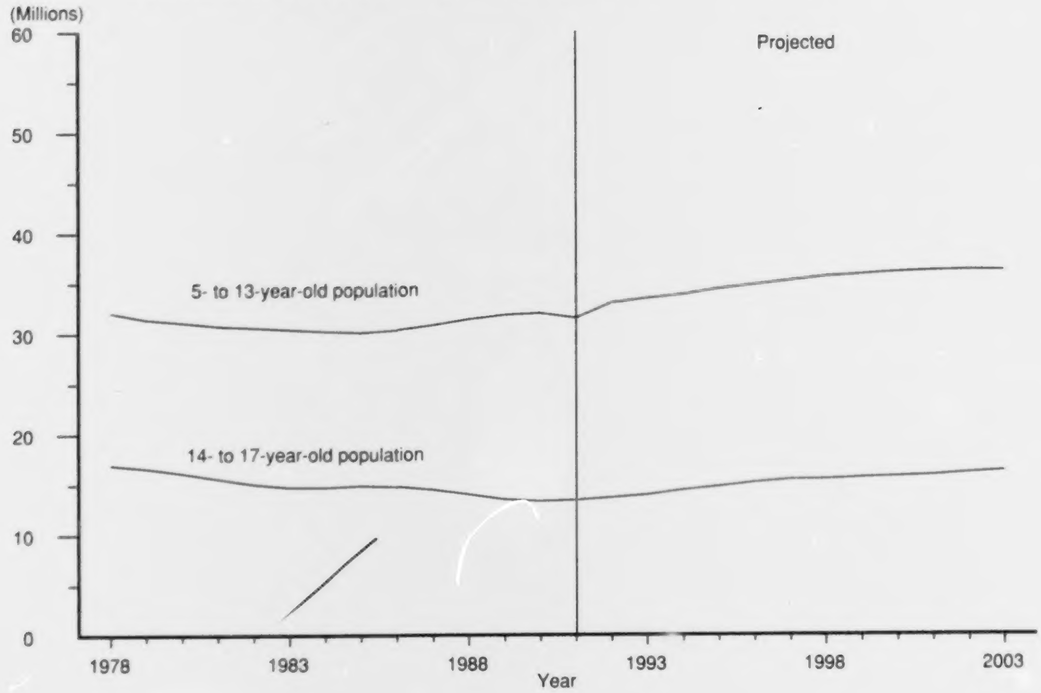

Figure 4
Enrollment in elementary and secondary schools, by grade level, with projections: Fall 1978 to fall 2003

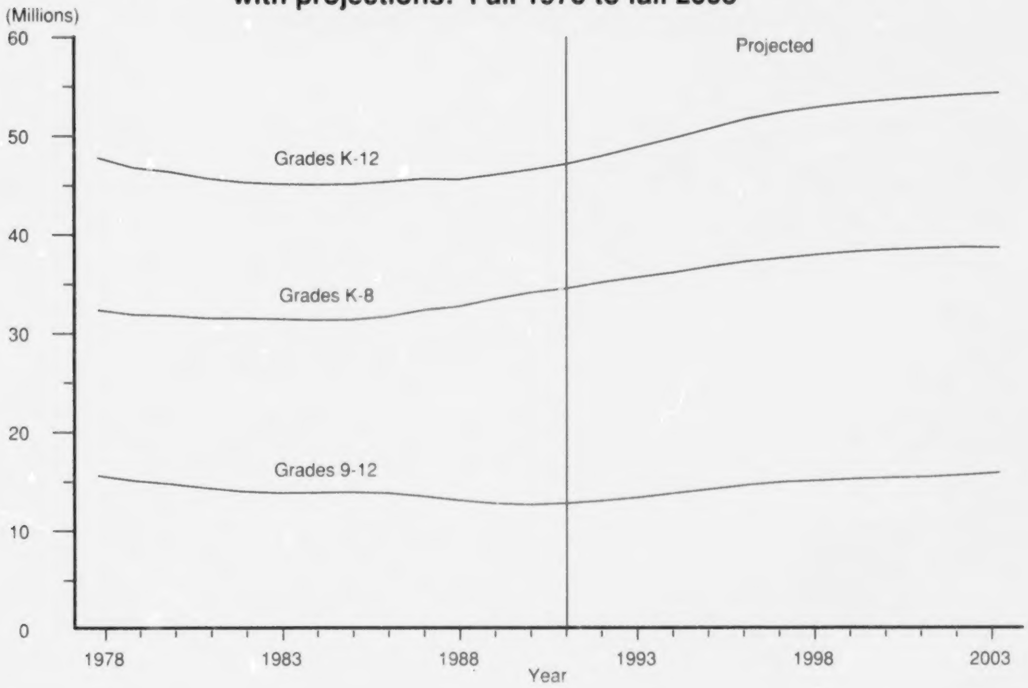

Figure 5
Enrollment in elementary and secondary schools, by control of institution, with projections: Fall 1978 to fall 2003

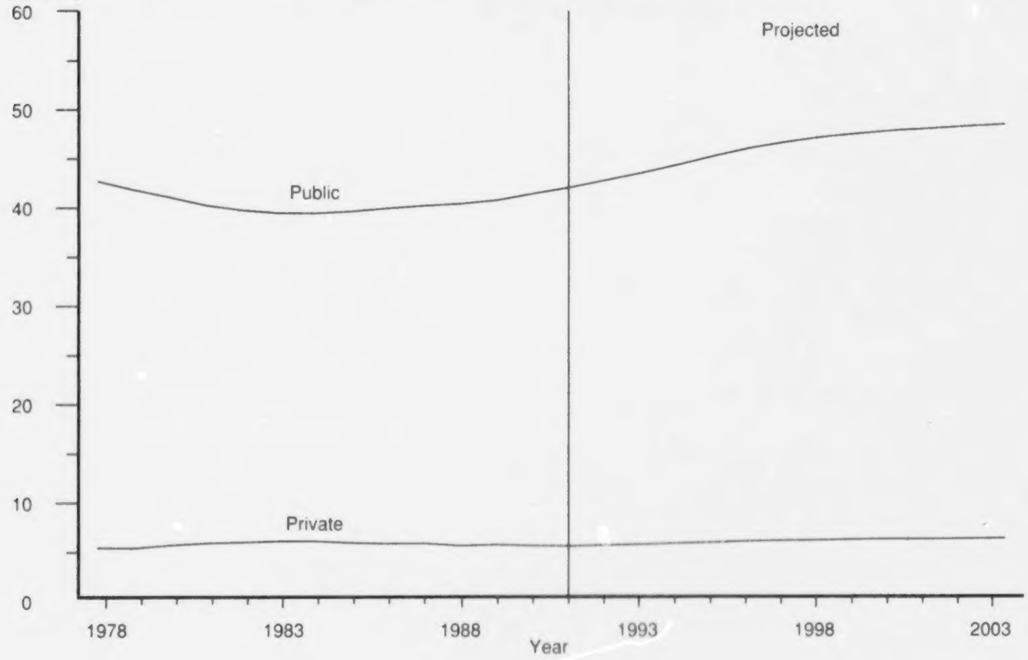

Table 1.—Enrollment in grades K–8[1] and 9–12 of elementary and secondary schools, by control of institution, with projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total			Public			Private		
	K–12[1]	K–8[1]	9–12	K–12[1]	K–8[1]	9–12	K–12[1]	K–8[1]	9–12
1978	47,637	32,195	15,441	42,551	28,463	14,088	5,086	3,732	1,353
1979	46,651	31,734	14,916	41,651	28,034	13,616	[2]5,000	3,700	1,300
1980	46,208	31,639	14,570	40,877	27,647	13,231	5,331	3,992	1,339
1981	45,544	31,380	14,164	40,044	27,280	12,764	[2]5,500	4,100	1,400
1982	45,166	31,361	13,805	39,566	27,161	12,405	[2]5,600	4,200	1,400
1983	44,967	31,296	13,671	39,252	26,981	12,271	5,715	4,315	1,400
1984	44,908	31,205	13,704	39,208	26,905	12,304	[2]5,700	4,300	1,400
1985	44,979	31,229	13,750	39,422	27,034	12,388	5,557	4,195	1,362
1986	45,205	31,536	13,669	39,753	27,420	12,333	[3]5,452	4,116	1,336
1987	45,488	32,165	13,323	40,008	27,933	12,076	[3]5,479	4,232	1,247
1988	45,430	32,537	12,893	40,189	28,501	11,687	[3]5,241	4,036	1,206
1989	45,898	33,314	12,583	40,543	29,152	11,390	[3]5,355	4,162	1,193
1990	46,450	33,978	12,472	41,224	29,888	11,336	[3]5,226	4,090	1,136
1991 [3]	47,032	34,422	12,610	41,839	30,353	11,486	5,193	4,069	1,124
					Projected				
1992	47,872	35,037	12,835	42,586	30,895	11,691	5,286	4,142	1,144
1993	48,734	35,553	13,181	43,356	31,350	12,006	5,378	4,203	1,175
1994	49,661	36,026	13,636	44,187	31,767	12,420	5,474	4,259	1,216
1995	50,651	36,613	14,038	45,071	32,285	12,786	5,580	4,328	1,252
1996	51,578	37,123	14,455	45,901	32,735	13,166	5,677	4,388	1,289
1997	52,285	37,523	14,762	46,533	33,087	13,446	5,752	4,436	1,316
1998	52,803	37,873	14,930	46,995	33,396	13,599	5,808	4,477	1,331
1999	53,221	38,131	15,089	47,368	33,624	13,744	5,853	4,507	1,345
2000	53,545	38,334	15,210	47,657	33,803	13,854	5,888	4,531	1,356
2001	53,811	38,494	15,317	47,895	33,944	13,951	5,916	4,550	1,366
2002	54,057	38,572	15,486	48,117	34,012	14,105	5,940	4,560	1,381
2003	54,230	38,523	15,707	48,276	33,969	14,307	5,954	4,554	1,400

[1] Includes most kindergarten and some nursery school enrollment.

[2] Estimated by NCES.

[3] Estimate.

NOTE: Some data have been revised from previously published figures. Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," *NCES Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," *NCES Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1990–91," *Early Estimates*; and Public and Private Elementary and Secondary Education Statistics: School Year 1991–92," *Early Estimates*. (This table was prepared May 1992.)

Table 2.—Enrollment in elementary and secondary schools, by organizational level and control of institution, with projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total			Public			Private		
	K-12[1]	Elementary	Secondary	K-12[1]	Elementary	Secondary	K-12[1]	Elementary	Secondary
1978	47,637	28,749	18,887	42,551	25,017	17,534	5,086	3,732	1,353
1979	46,651	28,247	18,404	41,651	24,547	17,104	[2]5,000	3,700	1,300
1980	46,208	28,188	18,020	40,877	24,196	16,681	5,331	3,992	1,339
1981	45,544	28,137	17,407	40,044	24,037	16,007	[2]5,500	4,100	1,400
1982	45,165	28,016	17,149	39,565	23,816	15,749	[2]5,600	4,200	1,400
1983	44,967	27,950	17,017	39,252	23,635	15,617	5,715	4,315	1,400
1984	44,908	28,042	16,866	39,208	23,742	15,466	[2]5,700	4,300	1,400
1985	44,979	28,330	16,649	39,422	24,135	15,287	5,557	4,195	1,362
1986	45,205	28,613	16,592	39,753	24,497	15,256	[2]5,452	4,116	1,336
1987	45,487	29,447	16,040	40,008	25,215	14,793	[3]5,479	4,232	1,247
1988	45,430	29,776	15,654	40,188	25,740	14,448	[3]5,241	4,036	1,206
1989	45,898	30,570	15,328	40,543	26,408	14,135	[3]5,355	4,162	1,193
1990	46,450	31,145	15,305	41,224	27,055	14,169	[3]5,226	4,090	1,136
1991[3]	47,032	31,489	15,543	41,839	27,420	14,419	5,193	4,069	1,124
					Projected				
1992	47,872	31,976	15,896	42,586	27,834	14,752	5,286	4,142	1,144
1993	48,734	32,399	16,335	43,356	28,196	15,160	5,378	4,203	1,175
1994	49,661	32,810	16,852	44,187	28,551	15,636	5,474	4,259	1,216
1995	50,651	33,350	17,301	45,071	29,022	16,049	5,580	4,328	1,252
1996	51,578	33,844	17,734	45,901	29,456	16,445	5,677	4,388	1,289
1997	52,285	34,219	18,066	46,533	29,783	16,750	5,752	4,436	1,316
1998	52,803	34,534	18,269	46,995	30,057	16,938	5,808	4,477	1,331
1999	53,221	34,771	18,449	47,368	30,264	17,104	5,853	4,507	1,345
2000	53,545	34,936	18,608	47,657	30,405	17,252	5,888	4,531	1,356
2001	53,811	35,026	18,785	47,895	30,476	17,419	5,916	4,550	1,366
2002	54,057	34,982	19,076	48,117	30,422	17,695	5,940	4,560	1,381
2003	54,230	34,853	19,377	48,276	30,299	17,977	5,954	4,554	1,400

[1] Includes most kindergarten and some nursery school enrollment.

[2] Estimated by NCES.

[3] Estimate.

NOTE: Some data have been revised from previously published figures. Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," *NCES Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," *NCES Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1990–91," *Early Estimates*; and "Public and Private Elementary and Secondary Education Statistics: School Year 1991–92," *Early Estimates*. (This table was prepared May 1992.)

Chapter 2

Higher Education Enrollment

Enrollment in institutions of higher education* is expected to rise between 1991 and the year 2003. The growth is due in part to the rising enrollment rates of most age cohorts. Changes in college-age populations will also affect enrollment levels over the next 12 years (figures 6 and 7). Over the projection period, the 25- to 29-year-old population is projected to decrease by 16 percent, and the 30- to 34-year-old population will decline by 13 percent. However, during the projection period, the 18- to 24-year-old population will begin to increase beginning in 1997, rising by 12 percent by the end of the projection period. On the other hand, the 35- to 44-year-old population will continue to increase over most of the projection period. The increases in the youngest and oldest populations are expected to offset the loss of students from the 25- to 29-year-old and 30- to 34-year-old populations, thereby contributing to the increases in college enrollment levels in 1992 and beyond.

Higher education enrollment projections were based on projected enrollment rates, by age and sex, which were then applied to population projections by age and sex developed by the Bureau of the Census. The middle series population projections, which assume middle fertility and net immigration, were used. The enrollment rates were projected by taking into account the most recent trends, as well as the effects of economic conditions and demographic changes on the enrollment rates of the younger age cohorts.

Three alternative projections of enrollment in institutions of higher education were developed to indicate the range of possible outcomes. The middle alternative assumes that the enrollment rates of most of the 18- to 24-year-olds will increase over the projection period, while those for older age groups are expected to remain constant at levels consistent with the most recent enrollment rates or increase slightly. In particular, the full-time and part-time enrollment rates of 18-year-old men were projected as a function of population by age cohort, unemployment rate, and disposable personal income. The full-time and part-time enrollment rates of 18-year-old women were projected as a function of population by age cohort and disposable personal income. The low alternative assumes that age-specific enrollment rates will either equal the middle alternative or change at a slower rate, based on past trends. Under the high alternative, the age-specific enrollment rates are projected to equal the middle alternative or increase at a faster rate, based on past trends for most age groups.

Total Higher Education Enrollment

In 1978, there were 11.3 million students enrolled in institutions of higher education. In the late 1970s and early 1980s, older students, primarily women and part-time students, began to enroll in greater numbers. As a result, college enrollment increased to 12.5 million in 1983. In 1984 and 1985, enrollment declined to 12.2 million. By 1991, it had risen to an estimated 14.2 million, exceeding its previous level attained in 1983 by nearly 1.7 million students (table 3 and figure 8). Under the middle alternative, college enrollment is projected to rise to 16.1 million by the year 2003, an increase of 14 percent. This will represent an average annual growth rate of 1.1 percent over the projection period, less than the growth rate of 1.8 percent during the 1978–91 period. Moreover, the greatest growth will occur toward the end of the projection period. Between 1991 and 1997, college enrollment is projected to increase at an average annual growth rate of 0.9 percent. Between 1997 and 2003, it will grow at an average annual growth rate of 1.3 percent (figure 9). Although the 18- to 24-year-old population is projected to decline until 1996, a decrease of 7 percent from 1991, this population will increase 12 percent by the year 2003. According to the Bureau of the Census, 58 percent of all college students were 18- to 24-years old in 1990. This increase in the younger population, along with enrollment rates remaining above 1991 levels and the continued increases in the number of older students, is expected to offset the decline in the number of 25- to 34-year-olds enrolled in college.

Under the low alternative, college enrollment is projected to increase from an estimated 14.2 million in 1991 to 15.1 million by the year 2003. This will represent an average annual growth rate of 0.5 percent, for an increase of 6 percent over the projection period. This alternative assumes that enrollment rates will either remain the same as the middle alternative or increase at a slower rate.

Under the high alternative, college enrollment is expected to increase from an estimated 14.2 million in 1991 to 16.7 million by the year 2003. This will represent an average annual growth rate of 1.4 percent, for an increase of 18 percent over the projection period. This high level is expected to be maintained during 1992 and beyond if the enrollment rates remain well above their 1991 levels.

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*This term applies mainly to those institutions that provide study beyond secondary school and that offer programs terminating in an associate, baccalaureate, or higher degree.

For key enrollment statistics, the following tabulations show: (1) the average annual rate of growth (in percent) for 1978–91 and alternative projected growth rates for 1991–2003; and (2) growth rates for 1978–85 and 1985–91 and the middle alternative projected growth rates for 1991–97 and 1997–2003.

Average annual rate of growth (in percent)

	1978–91	1991–2003		
		Low	Middle	High
Total	1.8	0.5	1.1	1.4
Men	1.0	0.5	1.2	1.5
Women	2.5	0.6	1.0	1.3
Full-time	1.4	0.7	1.3	1.6
Part-time	2.3	0.2	0.9	1.2
Public	1.8	0.5	1.1	1.4
Private	1.8	0.5	1.1	1.4
4-year	1.6	0.5	1.1	1.4
2-year	2.1	0.5	1.0	1.4
Undergraduate	1.8	0.6	1.1	1.4
Graduate	2.0	0.1	0.8	1.2
First-professional	1.3	0.2	0.9	1.3
Full-time-equivalent	1.6	0.6	1.2	1.5

Average annual rate of growth (in percent)

(Middle alternative projections)

	1978–85	1985–91	Projected	
			1991–97	1997–2003
Total	1.2	2.5	0.9	1.3
Men	0.4	1.6	0.6	1.7
Women	1.9	3.2	1.1	0.9
Full-time	0.8	2.1	0.7	1.9
Part-time	1.7	2.9	1.1	0.6
Public	1.1	2.6	0.9	1.3
Private	1.6	2.1	0.8	1.4
4-year	0.9	2.4	0.8	1.4
2-year	1.7	2.5	1.0	1.1
Undergraduate	1.3	2.3	0.8	1.5
Graduate	0.7	3.6	1.3	0.3
First-professional	0.9	1.7	1.3	0.5
Full-time-equivalent	1.0	2.3	0.8	1.6

Enrollment, by Sex of Student

Women played a major role in the increase of enrollment between 1978 and 1991. The enrollment of women in college increased from 5.6 million in 1978 to an estimated 7.8 million in 1991, representing an average annual growth rate of 2.5 percent, for a 38 percent increase over the period (figure 10). Under the middle alternative, enrollment of women is expected to increase to 8.7 million by the year 2003, an increase of 13 percent from 1991. This will represent a growth rate of 1.0 percent per year, considerably less than the growth rate of 2.5 percent for the 1978–91 period. The rate of growth will be higher during the first half of the projection period (1991–97) than during the second half (1997–2003), 1.1 percent per year versus 0.9 percent per year (figure 11). As a share of total college enrollment, women were 55 percent of all college enrollment in 1991 compared with only 50 percent in 1978. Women are expected to maintain a 54-percent share of college enrollment in the year 2003. Under the low and high alternatives, enrollment of women is projected to range between 8.3 million and 9.1 million by the year 2003, representing growth rates of 0.6 percent and 1.3 percent, respectively.

Despite fluctuations in enrollment to 1985, the enrollment of men in college has since increased from 5.9 million in 1986 to an estimated 6.4 million in 1991. Over the 1978–91 period, the growth rate of 1.0 percent per year for men was less than half of the rate for women. Under the middle alternative, enrollment of men is expected to increase to 7.4 million by the year 2003, a 15-percent increase from 1991, for an average annual growth rate of 1.2 percent. The growth rate of enrollment of men will be lower in the first half of the projection period than in the second half, 0.6 percent per year versus 1.7 percent per year. Under the low and high alternatives, the number of men enrolled in college is projected to range between 6.8 million and 7.7 million, representing growth rates of 0.5 percent and 1.5 percent, respectively.

Enrollment, by Attendance Status

Full-time enrollment increased from 6.7 million in 1978 to an estimated 8.0 million in 1991 (figure 12). This is an average annual growth rate of 1.4 percent, for an increase of 20 percent over the period. Under the middle alternative, full-time enrollment is expected to rise another 16 percent to 9.3 million by the year 2003, representing an average annual growth rate of 1.3 percent. Over the projection period, the growth rate for the 1991–97 period will be lower than the growth rate for the 1997–2003 period, 0.7 percent per year versus 1.9 percent per year (figure 13). This is probably due to the increased enrollment of 18- to 24-year-olds, who will tend to be enrolled full-time. Under the low and high alternatives, full-time enrollment is projected to range between 8.8 million and 9.7 million by the year 2003.

Part-time enrollment increased from 4.6 million in 1978 to an estimated 6.1 million in 1991. This is an average annual growth rate of 2.3 percent, for an increase of 34 percent over the period. Under the middle alternative, part-time enrollment is expected to increase at an average annual growth rate of 0.9 percent and reach 6.8 million by the year 2003, for an increase of 11 percent over the projection period. Unlike full-time enrollment, the growth rate for part-time enrollment during the 1991–97 period will be more than the growth rate for the 1997–2003 period, 1.1 percent versus 0.6 percent, as increasing numbers of younger students enroll full-time and populations of older students, who tend to enroll part-time, continue to decline over the projection period. Under the low and high alternatives, part-time enrollment is projected to range between

6.3 million and 7.1 million, representing growth rates of 0.2 percent and 1.2 percent, respectively.

Enrollment, by Control of Institution

Enrollment in public institutions grew from 8.8 million in 1978 to an estimated 11.0 million in 1991, increasing at an average annual rate of 1.8 percent, for an increase of 26 percent over the period (figure 14). Under the middle alternative, public enrollment is expected to increase to 12.6 million, rising by an average annual growth rate of 1.1 percent, for an increase of 14 percent over the projection period. During the projection period, enrollment in public institutions is projected to increase at an average annual growth rate of 0.9 percent during the 1991–97 period and 1.3 percent during the 1997–2003 period (figure 15). Enrollment in public 4-year institutions is projected to increase from an estimated 6.0 million in 1991 to 6.9 million by the year 2003. Enrollment in public 2-year institutions is expected to increase from 5.0 million in 1991 to 5.7 million by the year 2003.

Under the low and high alternatives, enrollment in public institutions is expected to range between 11.8 million and 13.0 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.5 percent over the projection period. For the high alternative, it is a growth rate of 1.4 percent.

Enrollment in private institutions increased from 2.5 million in 1978 to an estimated 3.1 million in 1991, increasing at an average annual growth rate of 1.8 percent, for an increase of 26 percent over the period. Under the middle alternative, private enrollment is expected to increase to 3.6 million, rising by an average annual growth rate of 1.1 percent, for an increase of 14 percent over the projection period. During the projection period, enrollment in private institutions is projected to increase at an annual growth rate of 0.8 percent during the 1991–97 period and 1.4 percent during the 1997–2003 period. Enrollment in private 4-year institutions is expected to increase from an estimated 2.9 million in 1991 to 3.3 million by the year 2003. Enrollment in private 2-year institutions is projected to increase from an estimated 267,000 in 1991 to 305,000 by the year 2003.

Under the low and high alternatives, enrollment in private institutions is expected to range between 3.3 million and 3.7 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.5 percent over the projection period. For the high alternative, it will be a growth rate of 1.4 percent.

Enrollment, by Type of Institution

Enrollment in 4-year institutions increased from 7.2 million in 1978 to an estimated 8.9 million in 1991, increasing at an average annual growth rate of 1.6 percent, for a 23-percent increase over the period (table 4 and figure 16). Under the middle alternative, enrollment in 4-year institutions is expected to rise to 10.2 million by the year 2003, increasing at an average annual growth rate of 1.1 percent, for a 14-percent increase over the projection period. During the projection period, enrollment in 4-year institutions is projected to increase at an annual growth rate of 0.8 percent during the 1991–97 period and 1.4 percent during the 1997–2003 period (figure 17).

Under the low and high alternatives, enrollment in 4-year institutions is expected to range between 9.5 million and 10.5 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.5 percent over the projection period. For the high alternative, it is a growth rate of 1.4 percent.

Enrollment in 2-year institutions rose from 4.0 million in 1978 to an estimated 5.3 million in 1991, increasing at an average annual growth rate of 2.1 percent, for a 31-percent increase over the period (table 5). Under the middle alternative, enrollment in 2-year institutions is expected to rise to 6.0 million by the year 2003, increasing at an average annual growth rate of 1.0 percent, for a 13-percent increase over the projection period. During the projection period, enrollment in 2-year institutions is projected to increase at an annual growth rate of 1.0 percent during the 1991–97 period and 1.1 percent during the 1997–2003 period.

Under the low and high alternatives, enrollment in 2-year institutions is expected to range between 5.6 million and 6.2 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.5 percent over the projection period. For the high alternative, it is a growth rate of 1.4 percent.

Enrollment, by Level

Undergraduate enrollment increased from 9.7 million in 1978 to an estimated 12.2 million in 1991, increasing at an average annual growth rate of 1.8 percent, for a 26-percent increase over the period (table 14 and figure 18). Under the middle alternative, undergraduate enrollment is expected to increase to 13.9 million by the year 2003, at a growth rate of 1.1 percent per year, for a 14-percent increase over the projection period. During the projection period, undergraduate enrollment is projected to increase at an annual growth rate of 0.8 percent during the 1991–1997 period and 1.5 percent during the 1997–2003 period (figure 19).

Under the low and high alternatives, undergraduate enrollment is expected to range between 13.1 million and 14.4 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.6 percent over the projection period. For the high alternative, it is a growth rate of 1.4 percent.

Graduate enrollment rose from 1.3 million in 1978 to an estimated 1.7 million in 1991, at an average annual growth rate of 2.0 percent, for a 30-percent increase over the period (table 17 and figure 20). Under the middle alternative, graduate enrollment is expected to increase to 1.9 million by the year 2003, increasing at an average annual growth rate of 0.8 percent, for a 10-percent increase over the projection period. During the projection period, graduate enrollment is projected to increase at an annual growth rate of 1.3 percent during the 1991–97 period and 0.3 percent during the 1997–2003 period (figure 21). The slower rate of growth in the 1997–2003 period reflects a decrease in the number of older students.

Under the low and high alternatives, graduate enrollment is expected to range between 1.7 million and 2.0 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.1 percent over the projection period. For the high alternative, it is a growth rate of 1.2 percent.

First-professional enrollment increased from 257,000 in 1978 to an estimated 303,000 in 1991, an average annual growth rate of 1.3 percent, for an 18-percent increase over the period (table 20 and figure 20). Under the middle alternative, first-professional enrollment is expected to increase to 338,000 by the year 2003, increasing at an average annual growth rate of 0.9 percent, for a 12-percent increase over the projection period. During the projection period, first-professional enrollment is projected to increase at an annual growth rate of 1.3 percent during the 1991–97 period and 0.5 percent during the 1997–2003 period.

Under the low and high alternatives, first-professional enrollment is expected to range between 310,000 and 353,000 by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.2 percent over the projection period. For the high alternative, it is a growth rate of 1.3 percent.

Full-Time-Equivalent Enrollment

Full-time-equivalent enrollment increased from 8.3 million in 1978 to an estimated 10.2 million in 1991, increasing at an average annual rate of growth of 1.6 percent, for a 23-percent increase over the period (table 23 and figure 22). Under the middle alternative, full-time-equivalent enrollment is expected to increase to 11.8 million by the year 2003, increasing at an average annual growth rate of 1.2 percent, for a 15-percent increase over the projection period. During the projection period, full-time-equivalent enrollment is projected to increase at an annual growth rate of 0.8 percent during the 1991–97 period and 1.6 percent during the 1997–2003 period (figure 23).

The full-time-equivalent of undergraduate enrollment in 4-year institutions, which was an estimated 5.9 million in 1991, will be 6.8 million by the year 2003. The full-time-equivalent of undergraduate enrollment in 2-year institutions, which was an estimated 3.0 million in 1991, will be 3.5 million by the year 2003.

In public institutions, full-time-equivalent enrollment, which was an estimated 7.7 million in 1991, will be 8.9 million by the year 2003. In private institutions, full-time-equivalent enrollment, which was an estimated 2.5 million in 1991, will be 2.9 million by the year 2003.

Under the low and high alternatives, full-time-equivalent enrollment is expected to range between 11.0 million and 12.2 million by the year 2003. For the low alternative, this is a projected average annual growth rate of 0.6 percent over the projection period. For the high alternative, it is a growth of 1.5 percent.

Enrollment, by Age

The alternative projections of higher education enrollment by age, sex, and attendance status are shown in table 6 (middle alternative), table 7 (low alternative), and table 8 (high alternative). These projections are based on age-specific enrollment data from the Bureau of the Census and enrollment data from NCES.

Under the middle alternative, the period from 1983 to 2003 will be one of change in the age distribution of college students. The enrollment of students who are 18- to 24-years old increased from 7.2 million in 1983 to an estimated 7.8 million in 1991, an increase of 8 percent (figure 24). This number is expected to increase to 9.2 million by the year 2003, an increase of 19 percent. As a result, the proportion of students who are 18- to 24-years old, which fell from 57.4 percent in 1983 to 54.8 percent in 1991, is projected to be 57.2 percent by the year 2003.

On the other hand, the enrollment of students who are 25 years old and over increased from 5.1 million in 1983 to an estimated 6.2 million in 1991, an increase of 23 percent. This number is projected to increase to 6.7 million by the year 2003, an increase of 7 percent. The projected smaller percent increase in the enrollment of students 25 years old and over is due, in part, to the declines in the 25- to 29-year-old population and the 30- to 34-year-old population over the projection period. However, the 35- to 44-year-old population will continue to increase for most of the projection period, contributing to the growth during this period. Over the projection period, the proportion of students 25 years old and over rose from 40.6 percent in 1983 to 44.0 percent in 1991. This proportion is projected to be 41.3 percent by the year 2003.

Under the low and high alternatives, the college enrollment of students 18- to 24-years old is projected to range between 8.8 million and 9.5 million by the year 2003. The college enrollment of students 25 years old and over is expected to range between 6.1 million and 7.0 million by the year 2003.

Figure 6

College-age populations (18-24 years and 25-29 years), with projections: 1978 to 2003

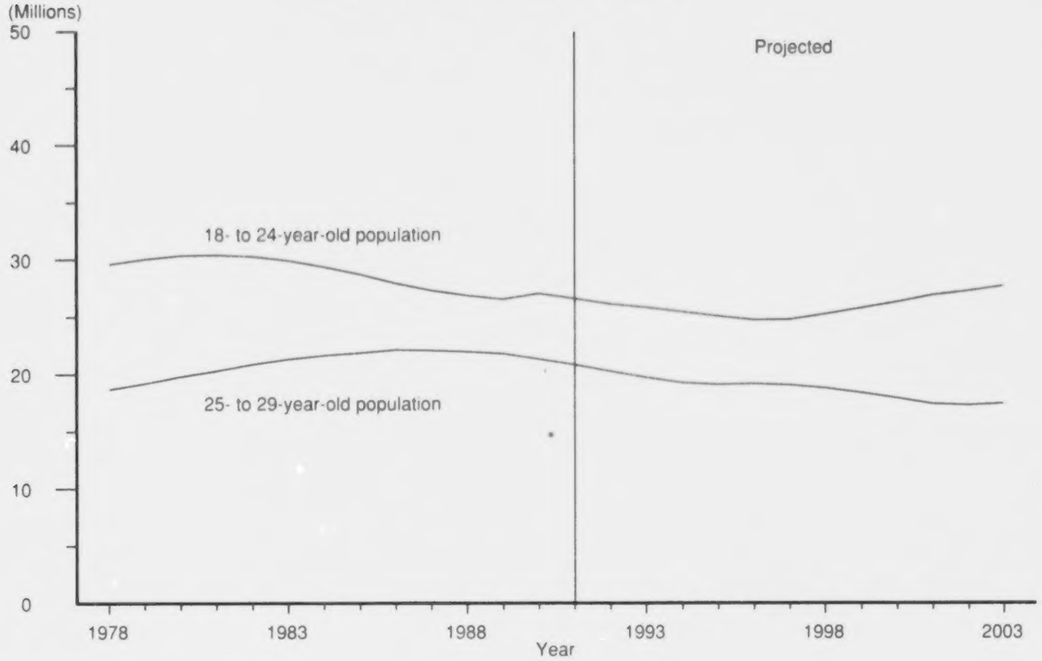

Figure 7

College-age populations (30-34 years and 35-44 years), with projections: 1978 to 2003

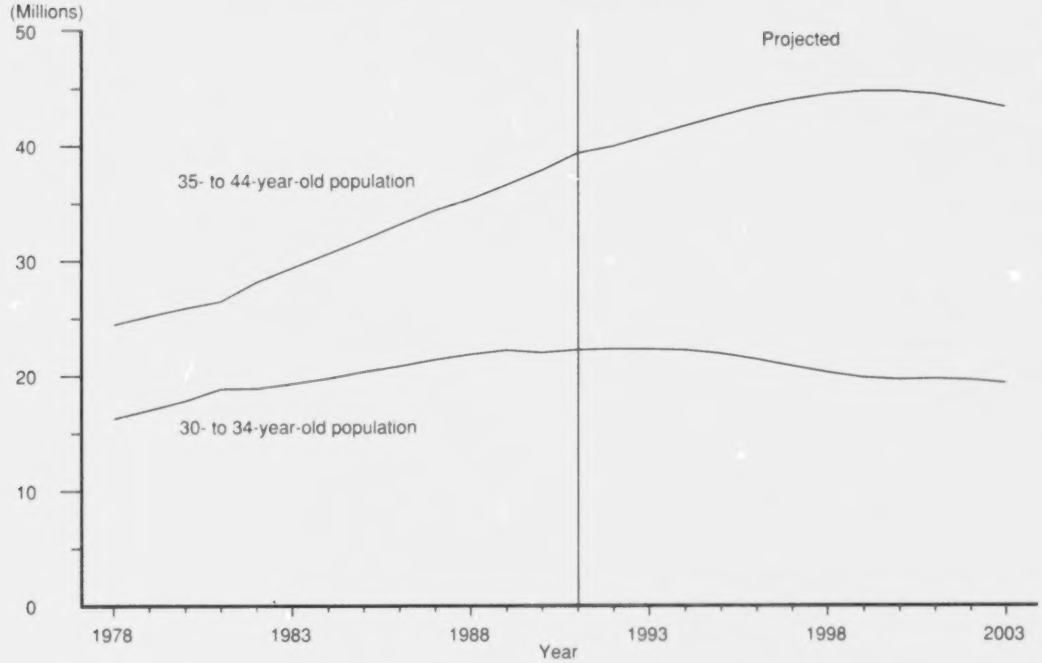

Figure 8
Enrollment in institutions of higher education, with alternative projections: Fall 1978 to fall 2003

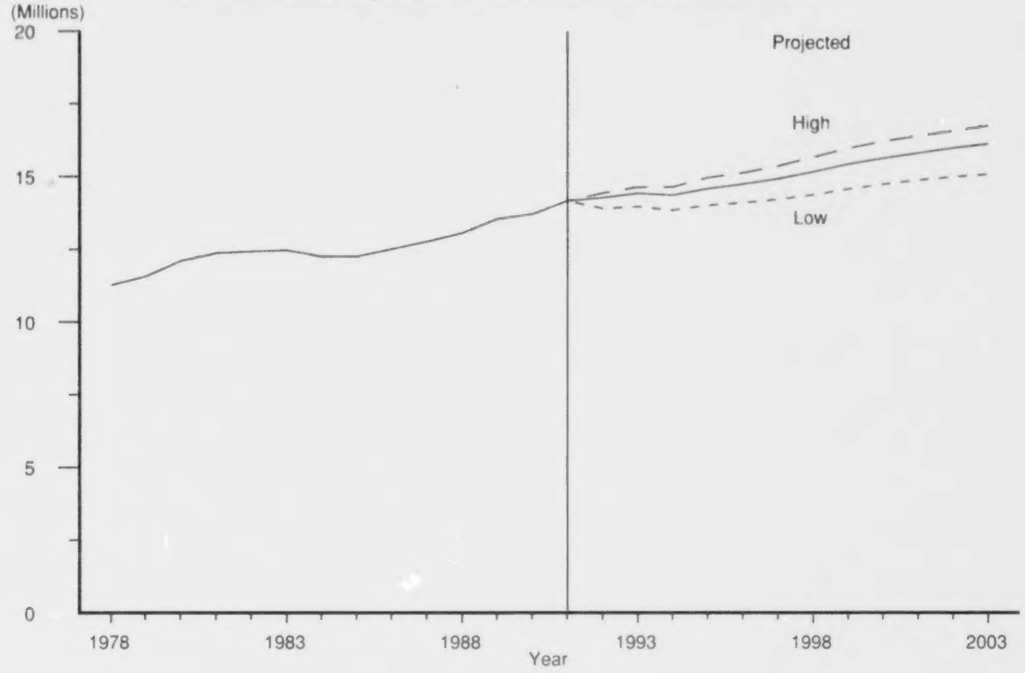

Figure 9
Average annual growth rates for total higher education enrollment

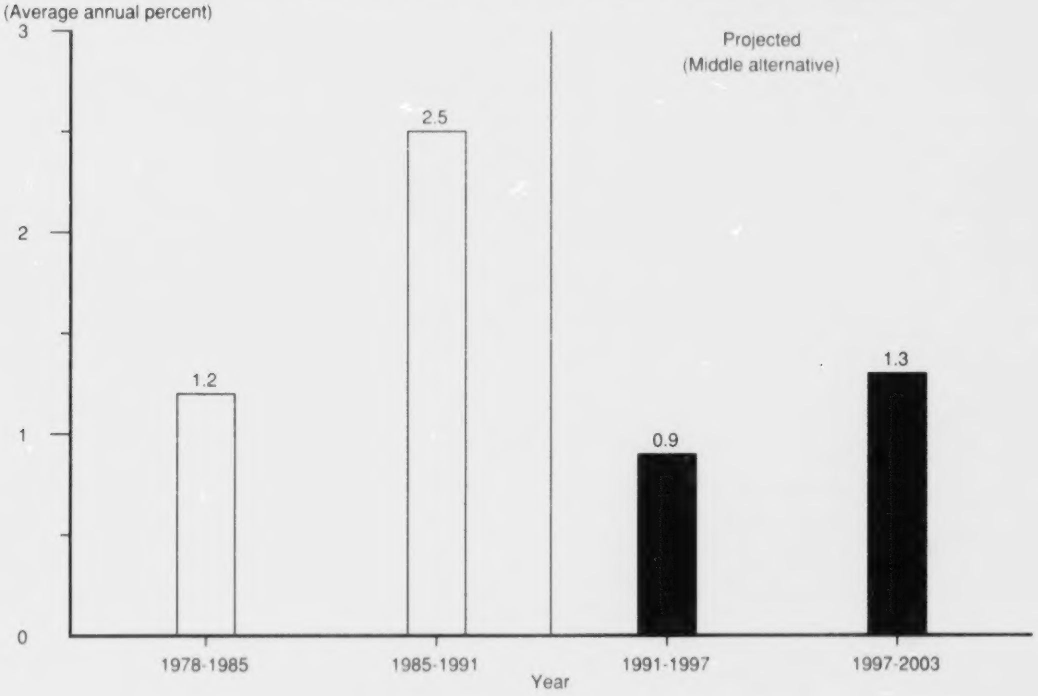

Figure 10
Enrollment in institutions of higher education, by sex, with middle alternative projections: Fall 1978 to fall 2003

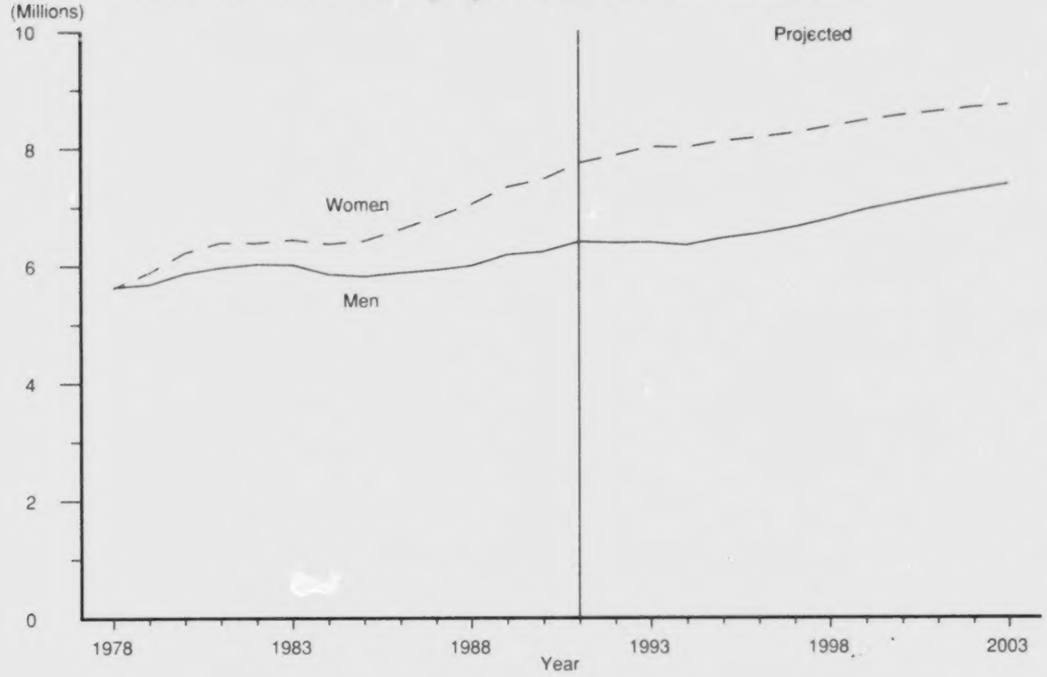

Figure 11
Average annual growth rates for total higher education enrollment, by sex

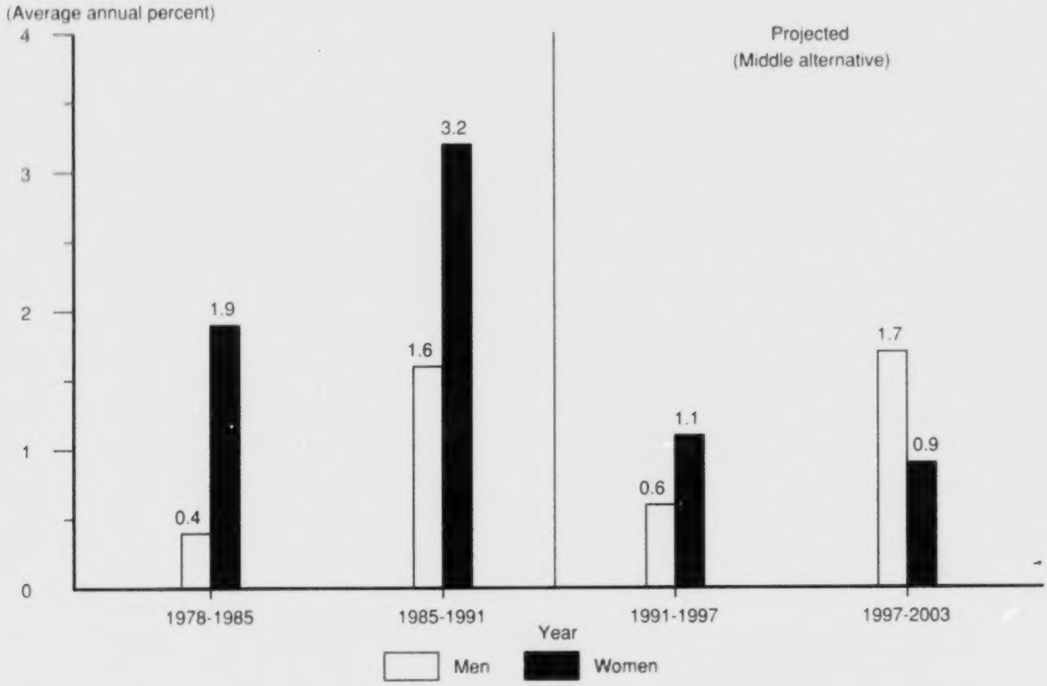

Figure 12

Enrollment in institutions of higher education, by attendance status, with middle alternative projections: Fall 1978 to fall 2003

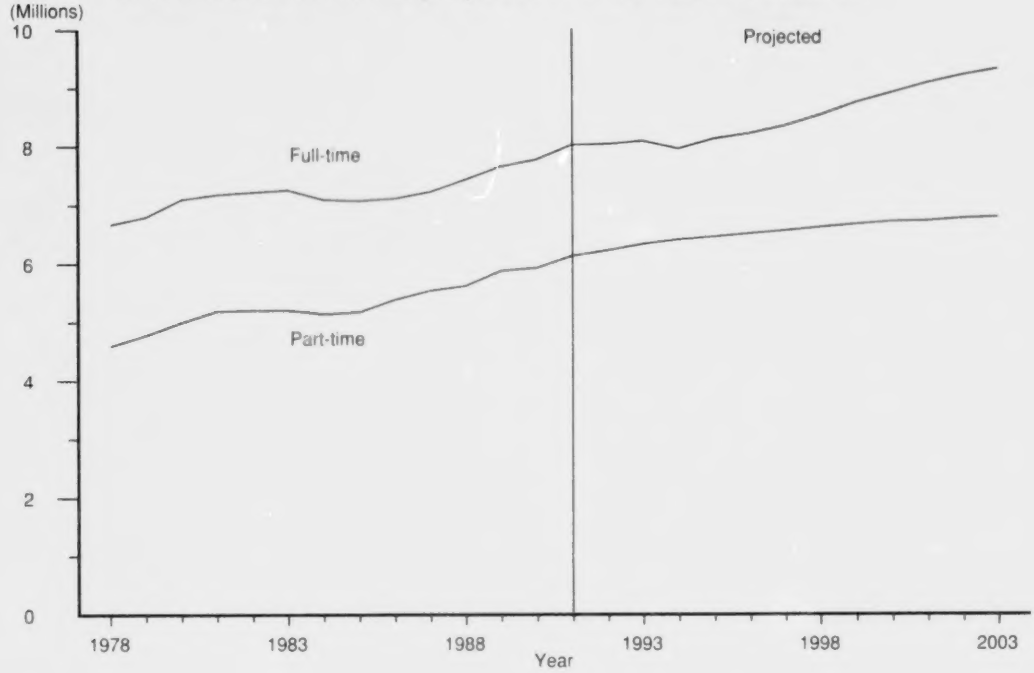

Figure 13

Average annual growth rates for total higher education enrollment, by attendance status

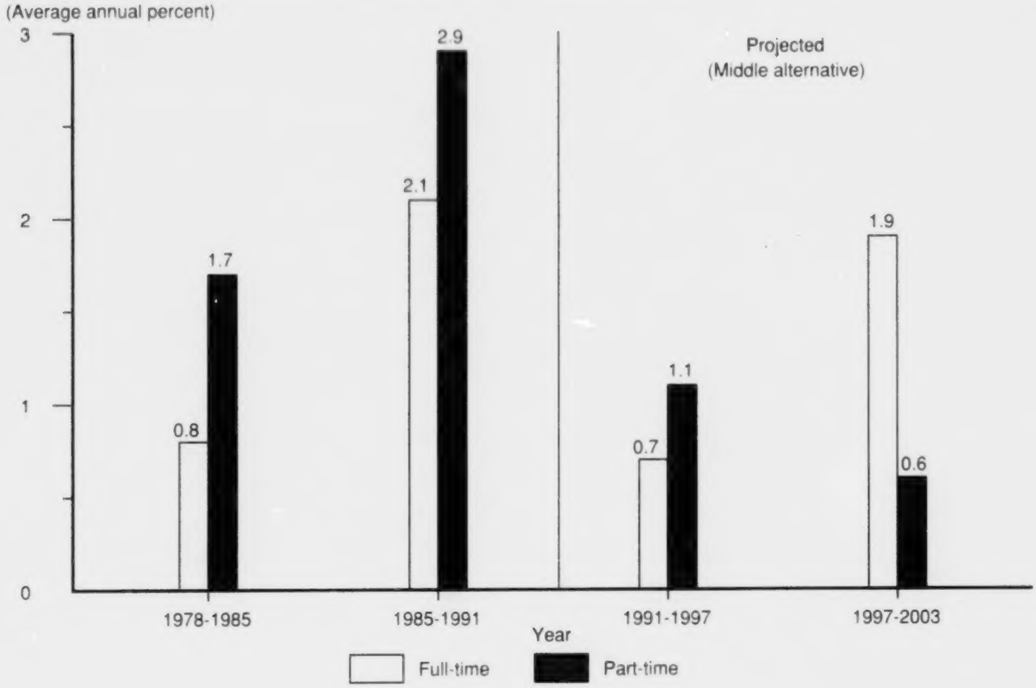

Figure 14
Enrollment in institutions of higher education, by control of institution, with alternative projections: Fall 1978 to fall 2003

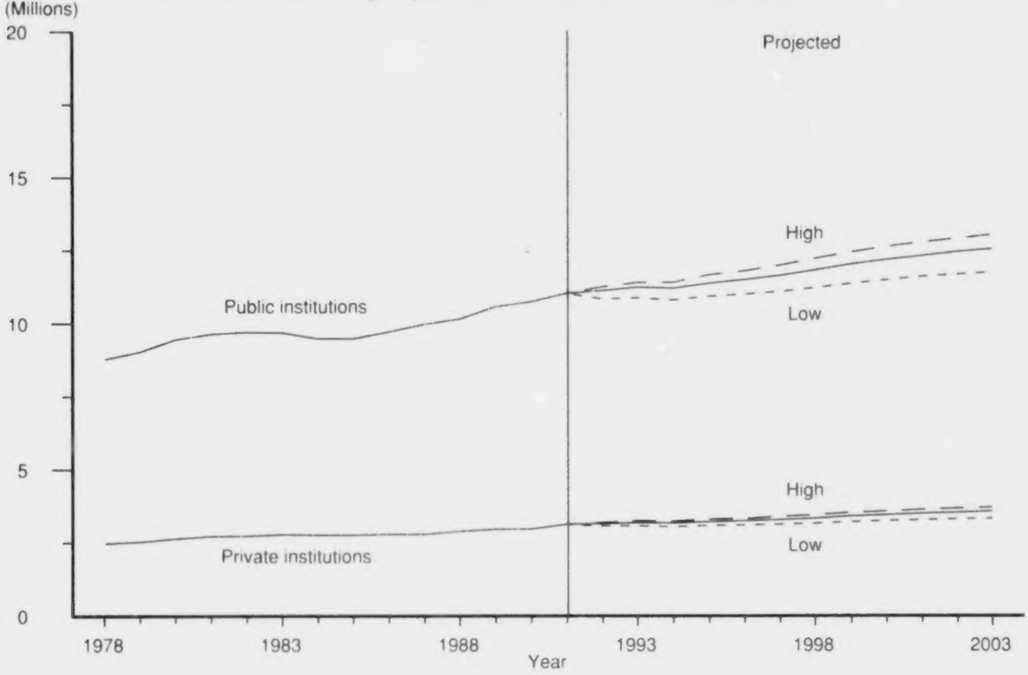

Figure 15
Average annual growth rates for total higher education enrollment, by control of institution

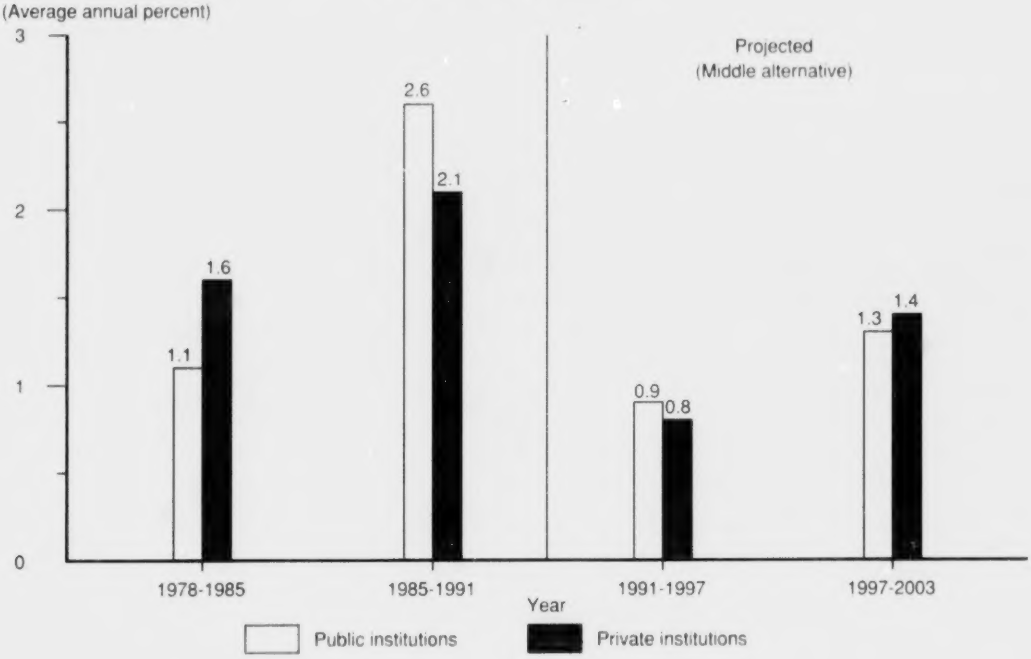

Figure 16
Enrollment in institutions of higher education, by type of institution, with alternative projections: Fall 1978 to fall 2003

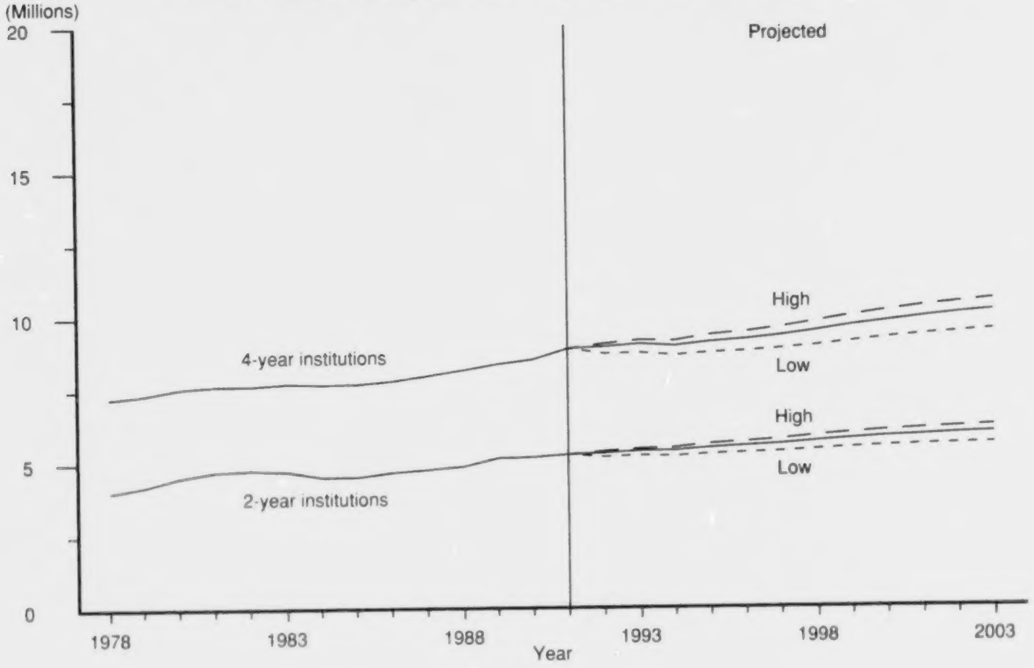

Figure 17
Average annual growth rates for total higher education enrollment, by type of institution

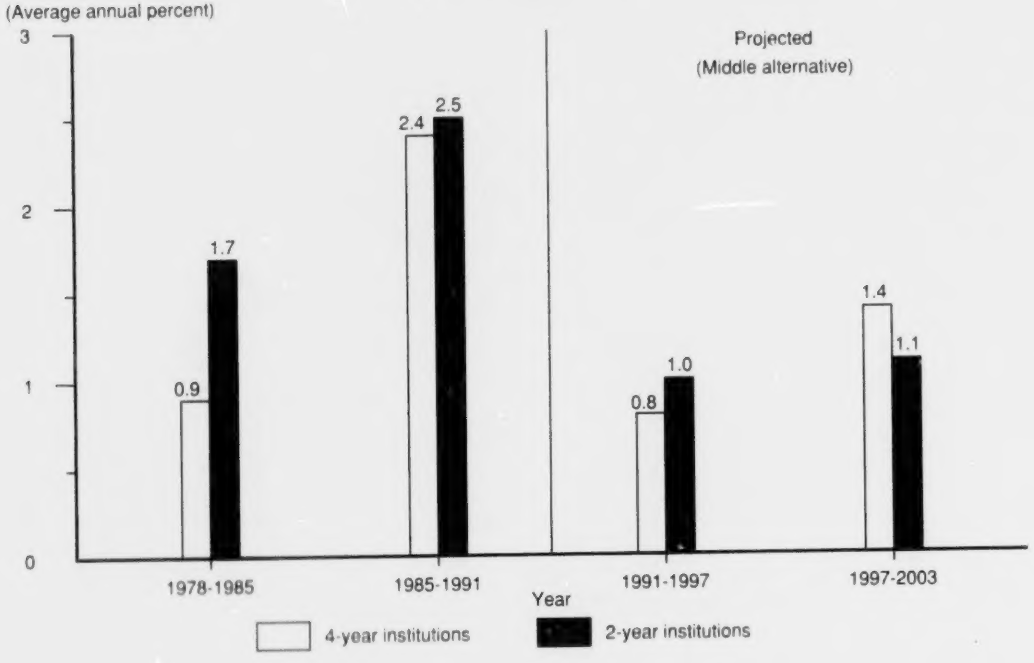

Figure 18
Undergraduate enrollment in institutions of higher education, with alternative projections: Fall 1978 to fall 2003

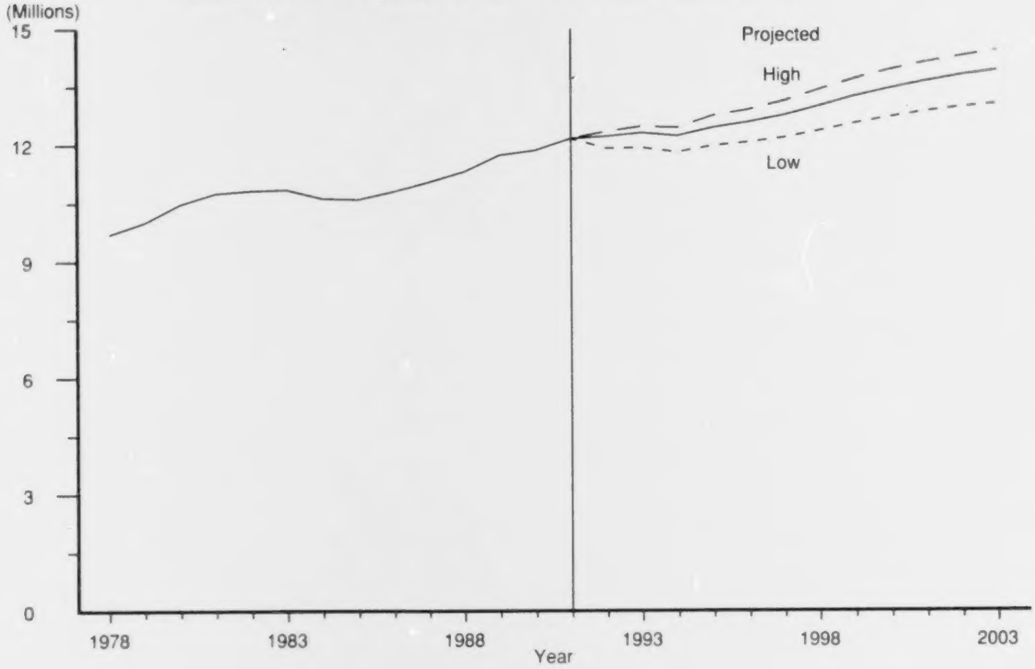

Figure 19
Average annual growth rates for undergraduate enrollment

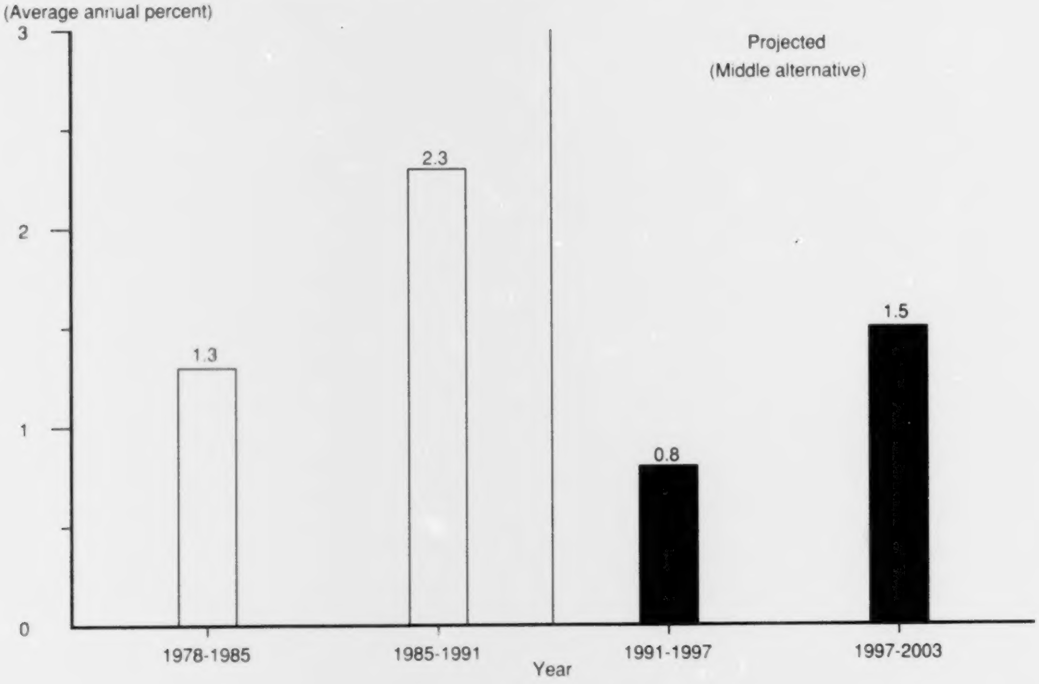

Figure 20
Postbaccalaureate enrollment in institutions of higher education, with alternative projections: Fall 1978 to fall 2003

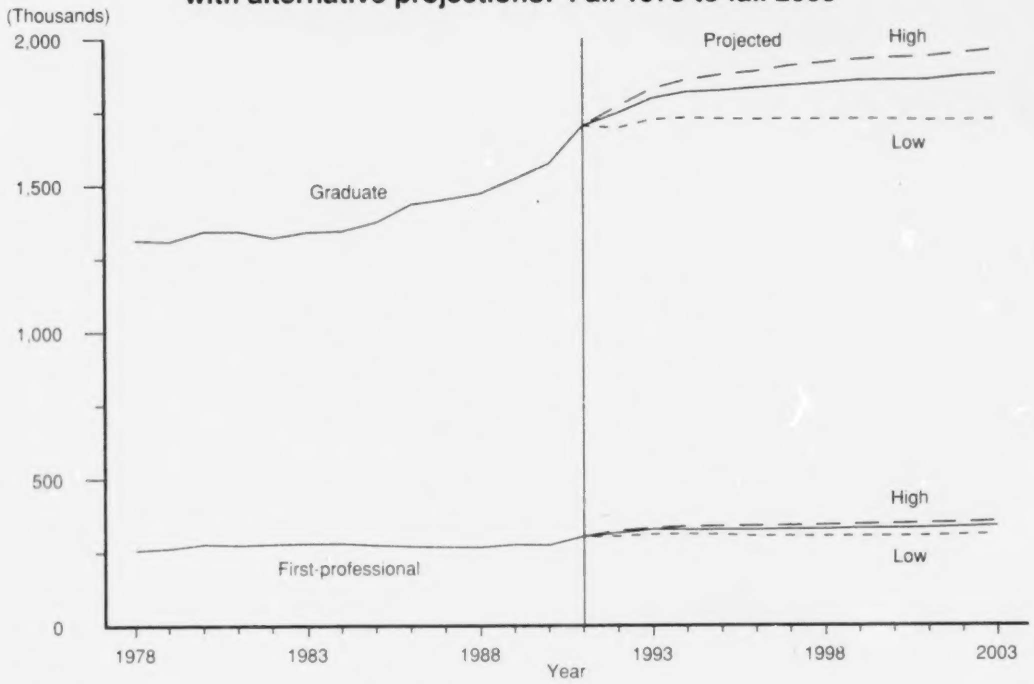

Figure 21
Average annual growth rates for postbaccalaureate enrollment

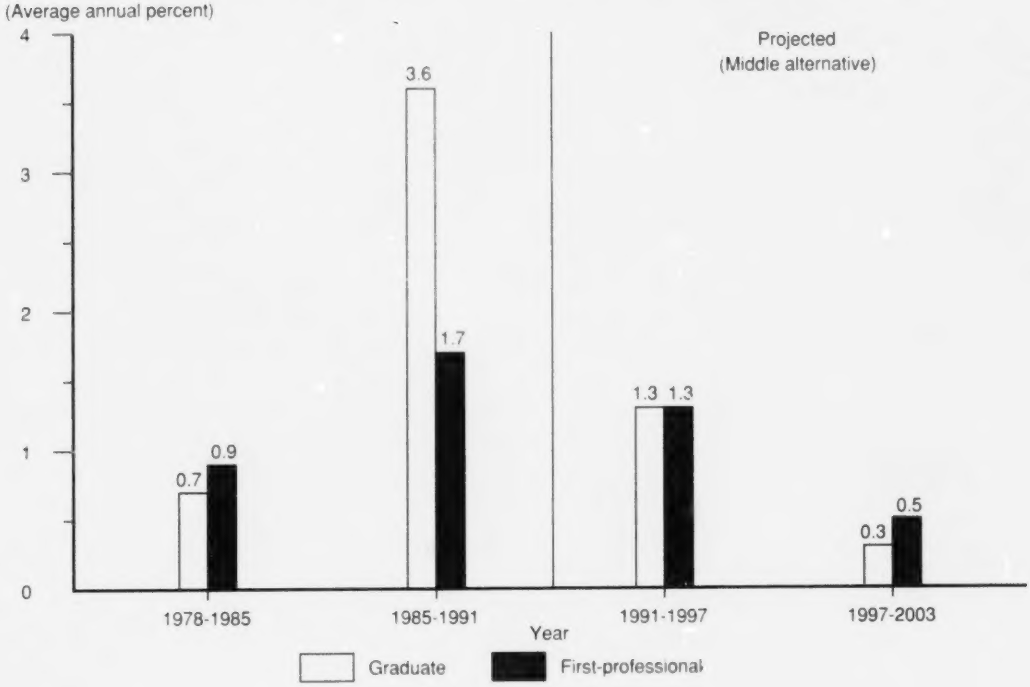

Figure 22
Full-time-equivalent enrollment in institutions of higher education, with alternative projections: Fall 1978 to fall 2003

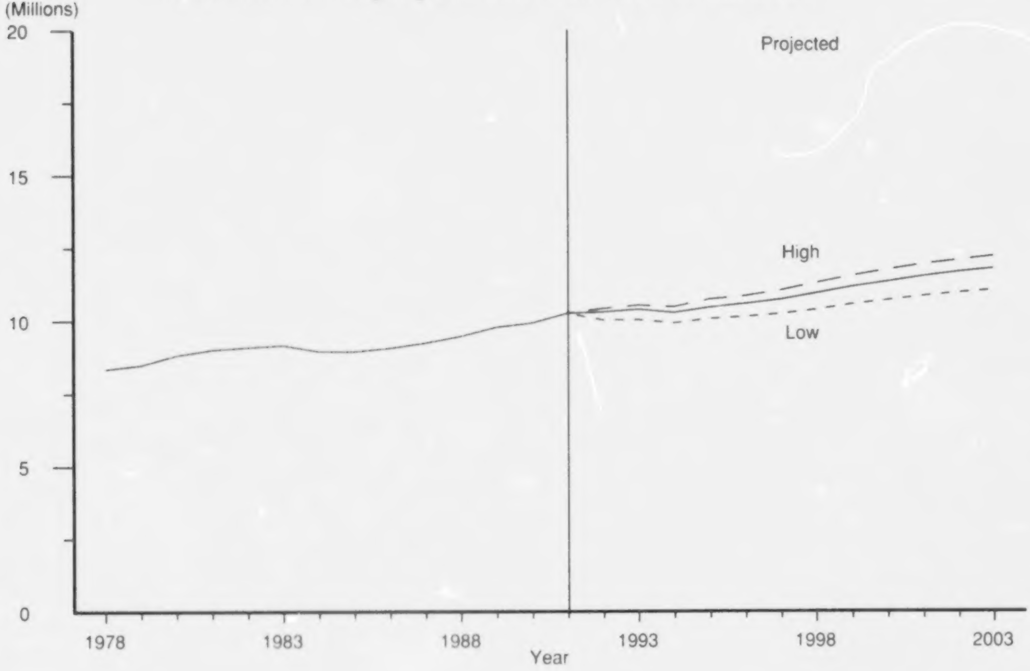

Figure 23
Average annual growth rates for full-time-equivalent enrollment

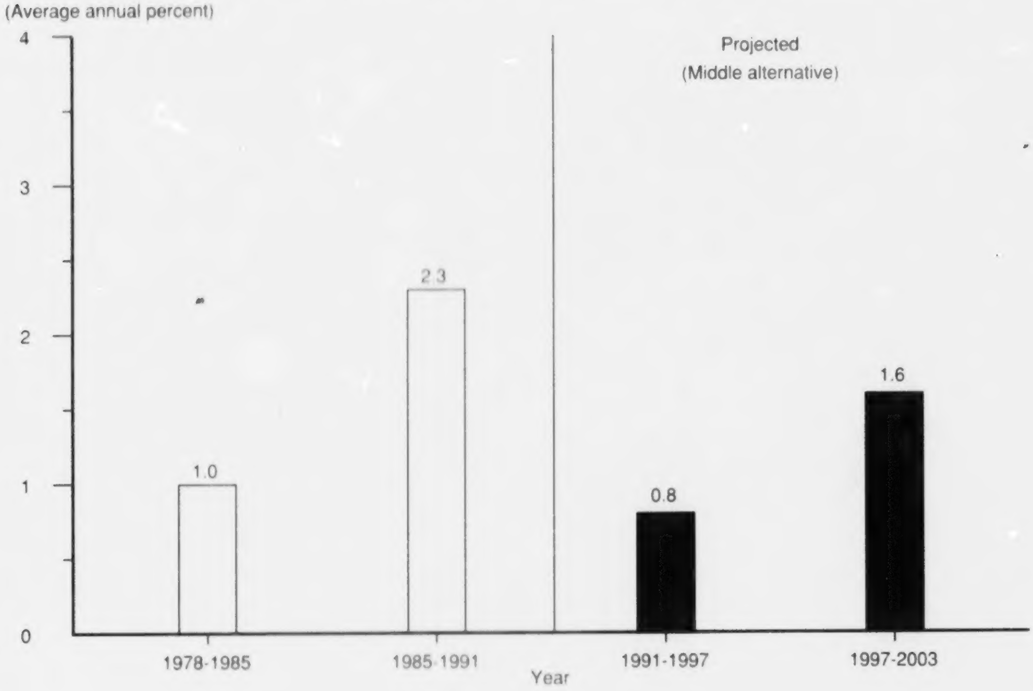

Figure 24
Enrollment in institutions of higher education, by age group, with middle alternative projections: Fall 1983, 1991, and 2003

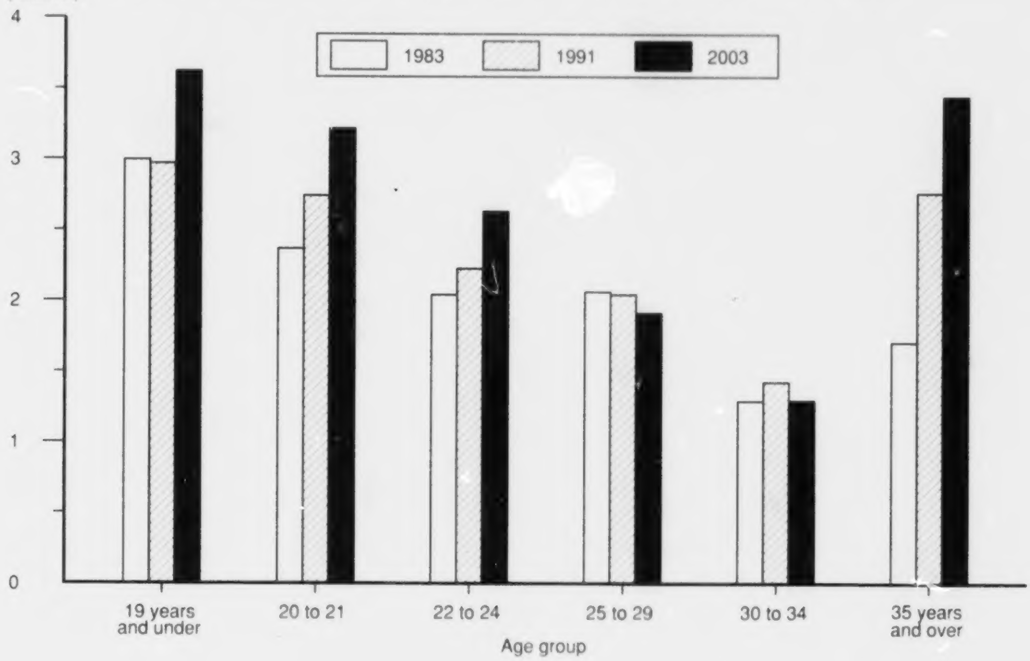

Figure 25
Enrollment of men in institutions of higher education, by age group, with middle alternative projections: Fall 1983, 1991, and 2003

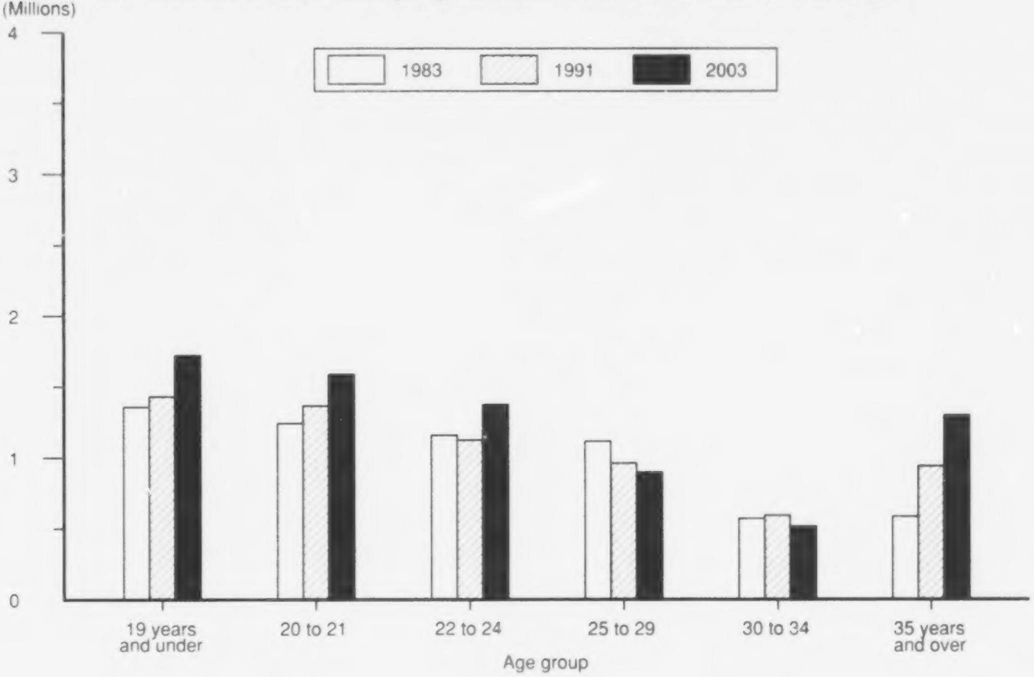

Figure 26
Enrollment of women in institutions of higher education, by age group, with middle alternative projections: Fall 1983, 1991, and 2003

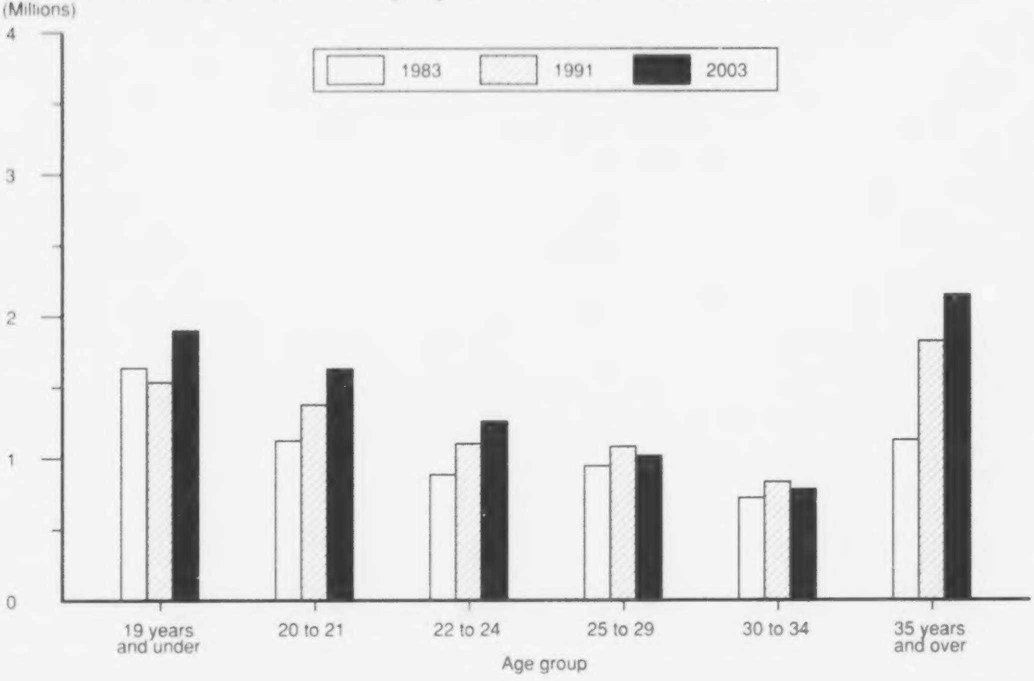

Table 3.—Total enrollment in all institutions of higher education, by sex, attendance status, and control of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1978	11,260	5,641	5,619	6,668	4,592	8,786	2,474
1979	11,570	5,683	5,887	6,794	4,776	9,037	2,533
1980	12,097	5,874	6,223	7,098	4,999	9,457	2,640
1981	12,372	5,975	6,397	7,181	5,190	9,647	2,725
1982	12,426	6,031	6,394	7,221	5,205	9,696	2,730
1983	12,465	6,024	6,441	7,261	5,204	9,683	2,782
1984	12,242	5,864	6,378	7,098	5,144	9,477	2,765
1985	12,247	5,818	6,429	7,075	5,172	9,479	2,768
1986	12,504	5,885	6,619	7,120	5,384	9,714	2,790
1987	12,767	5,932	6,835	7,231	5,536	9,973	2,793
1988	13,055	6,002	7,053	7,437	5,619	10,161	2,894
1989	13,539	6,190	7,349	7,661	5,878	10,578	2,961
1990	13,710	6,239	7,472	7,781	5,930	10,741	2,970
1991*	14,169	6,412	7,757	8,032	6,137	11,040	3,129
Middle alternative projections							
1992	14,276	6,395	7,881	8,048	6,228	11,122	3,154
1993	14,431	6,400	8,031	8,097	6,334	11,242	3,189
1994	14,373	6,355	8,018	7,961	6,412	11,206	3,167
1995	14,591	6,471	8,120	8,131	6,460	11,376	3,215
1996	14,739	6,551	8,188	8,224	6,515	11,494	3,245
1997	14,922	6,658	8,264	8,355	6,567	11,637	3,285
1998	15,167	6,794	8,373	8,542	6,625	11,826	3,341
1999	15,431	6,956	8,475	8,755	6,676	12,029	3,402
2000	15,634	7,071	8,563	8,916	6,718	12,186	3,448
2001	15,814	7,194	8,620	9,087	6,727	12,320	3,494
2002	15,993	7,300	8,693	9,218	6,775	12,457	3,536
2003	16,124	7,386	8,738	9,327	6,797	12,555	3,569
Low alternative projections							
1992	13,910	6,257	7,653	7,835	6,075	10,840	3,070
1993	13,961	6,211	7,750	7,821	6,140	10,881	3,080
1994	13,852	6,129	7,723	7,695	6,157	10,802	3,050
1995	14,014	6,189	7,825	7,834	6,180	10,930	3,084
1996	14,095	6,223	7,872	7,891	6,204	10,997	3,098
1997	14,215	6,279	7,936	7,979	6,236	11,089	3,126
1998	14,380	6,362	8,018	8,113	6,267	11,219	3,161
1999	14,577	6,469	8,108	8,281	6,296	11,370	3,207
2000	14,737	6,554	8,183	8,426	6,311	11,492	3,245
2001	14,879	6,642	8,237	8,561	6,318	11,601	3,278
2002	14,990	6,716	8,274	8,673	6,317	11,681	3,309
2003	15,085	6,774	8,311	8,767	6,318	11,752	3,333
High alternative projections							
1992	14,435	6,476	7,959	8,132	6,303	11,245	3,190
1993	14,636	6,508	8,128	8,210	6,426	11,400	3,236
1994	14,642	6,470	8,172	8,115	6,527	11,413	3,229
1995	14,964	6,631	8,333	8,339	6,625	11,665	3,299
1996	15,127	6,718	8,409	8,433	6,694	11,795	3,332
1997	15,369	6,856	8,513	8,594	6,775	11,983	3,386
1998	15,673	7,018	8,655	8,821	6,852	12,221	3,452
1999	15,965	7,175	8,790	9,036	6,929	12,445	3,520
2000	16,204	7,316	8,888	9,227	6,977	12,628	3,576
2001	16,401	7,452	8,949	9,407	6,994	12,775	3,626
2002	16,575	7,558	9,017	9,529	7,046	12,908	3,667
2003	16,737	7,672	9,065	9,661	7,076	13,031	3,706

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 4.—Total enrollment in 4-year institutions of higher education, by sex, attendance status, and control of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1978	7,232	3,755	3,476	5,109	2,122	4,912	2,320
1979	7,353	3,762	3,591	5,202	2,151	4,980	2,373
1980	7,571	3,827	3,743	5,344	2,226	5,129	2,442
1981	7,655	3,852	3,805	5,387	2,270	5,166	2,489
1982	7,654	3,861	3,793	5,381	2,273	5,176	2,478
1983	7,741	3,893	3,849	5,434	2,307	5,223	2,518
1984	7,711	3,847	3,864	5,395	2,317	5,198	2,513
1985	7,716	3,816	3,900	5,385	2,331	5,210	2,506
1986	7,824	3,824	4,000	5,423	2,401	5,300	2,524
1987	7,990	3,859	4,131	5,522	2,468	5,432	2,558
1988	8,180	3,912	4,268	5,693	2,487	5,546	2,634
1989	8,388	3,973	4,414	5,805	2,582	5,694	2,693
1990	8,529	4,031	4,498	5,908	2,622	5,803	2,726
1991 *	8,900	4,192	4,708	6,120	2,780	6,038	2,862
Middle alternative projections							
1992	8,963	4,181	4,782	6,139	2,824	6,076	2,887
1993	9,048	4,180	4,868	6,171	2,877	6,130	2,918
1994	8,984	4,143	4,841	6,070	2,914	6,085	2,899
1995	9,117	4,216	4,901	6,183	2,934	6,177	2,940
1996	9,203	4,263	4,940	6,246	2,957	6,235	2,968
1997	9,320	4,330	4,990	6,344	2,976	6,317	3,003
1998	9,481	4,418	5,063	6,486	2,995	6,428	3,053
1999	,662	4,528	5,134	6,649	3,013	6,552	3,110
2000	,800	4,603	5,197	6,776	3,024	6,649	3,151
2001	9,935	4,685	5,250	6,909	3,026	6,742	3,193
2002	10,058	4,760	5,298	7,016	3,042	6,825	3,233
2003	10,155	4,820	5,335	7,105	3,050	6,891	3,264
Low alternative projections							
1992	8,726	4,086	4,640	5,972	2,754	5,917	2,809
1993	8,743	4,051	4,692	5,957	2,786	5,925	2,818
1994	8,657	3,989	4,668	5,863	2,794	5,866	2,791
1995	8,755	4,025	4,730	5,954	2,801	5,935	2,820
1996	8,797	4,041	4,756	5,988	2,809	5,965	2,832
1997	8,873	4,075	4,798	6,054	2,819	6,016	2,857
1998	8,977	4,127	4,850	6,152	2,825	6,090	2,887
1999	9,112	4,199	4,913	6,279	2,833	6,183	2,929
2000	9,227	4,258	4,969	6,396	2,831	6,263	2,964
2001	9,331	4,321	5,010	6,503	2,828	6,336	2,995
2002	9,418	4,376	5,042	6,593	2,825	6,395	3,023
2003	9,493	4,420	5,073	6,672	2,821	6,447	3,046
High alternative projections							
1992	9,066	4,234	4,832	6,206	2,860	6,145	2,921
1993	9,181	4,252	4,929	6,260	2,921	6,219	2,962
1994	9,157	4,218	4,939	6,189	2,968	6,201	2,956
1995	9,355	4,322	5,033	6,344	3,011	6,337	3,018
1996	9,450	4,374	5,076	6,408	3,042	6,402	3,048
1997	9,606	4,463	5,143	6,530	3,076	6,509	3,097
1998	9,801	4,564	5,237	6,697	3,104	6,645	3,156
1999	9,994	4,666	5,328	6,860	3,134	6,778	3,216
2000	10,160	4,759	5,401	7,010	3,150	6,891	3,269
2001	10,306	4,849	5,457	7,150	3,156	6,992	3,314
2002	10,424	4,923	5,501	7,251	3,173	7,072	3,352
2003	10,541	5,002	5,539	7,356	3,185	7,152	3,389

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 5.—Total enrollment in 2-year institutions of higher education, by sex, attendance status, and control of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1978	4,028	1,885	2,143	1,558	2,470	3,874	154
1979	4,217	1,924	2,294	1,591	2,627	4,057	160
1980	4,526	2,047	2,479	1,754	2,772	4,329	198
1981	4,716	2,124	2,591	1,796	2,919	4,481	236
1982	4,772	2,170	2,602	1,840	2,932	4,520	252
1983	4,723	2,131	2,592	1,827	2,897	4,459	264
1984	4,531	2,017	2,514	1,704	2,827	4,279	252
1985	4,531	2,002	2,529	1,691	2,840	4,270	261
1986	4,680	2,061	2,619	1,696	2,983	4,414	266
1987	4,776	2,073	2,703	1,709	3,068	4,541	235
1988	4,875	2,090	2,785	1,744	3,132	4,615	260
1989	5,151	2,217	2,934	1,856	3,295	4,884	267
1990	5,181	2,208	2,973	1,873	3,308	4,938	243
1991 *	5,269	2,220	3,049	1,912	3,357	5,002	267
			Middle alternative projections				
1992	5,313	2,214	3,099	1,909	3,404	5,046	267
1993	5,383	2,220	3,163	1,926	3,457	5,112	271
1994	5,389	2,212	3,177	1,891	3,498	5,121	268
1995	5,474	2,255	3,219	1,948	3,526	5,199	275
1996	5,536	2,288	3,248	1,978	3,558	5,259	277
1997	5,602	2,328	3,274	2,011	3,591	5,320	282
1998	5,686	2,376	3,310	2,056	3,630	5,398	288
1999	5,769	2,428	3,341	2,106	3,663	5,477	292
2000	5,834	2,468	3,366	2,140	3,694	5,537	297
2001	5,879	2,509	3,370	2,178	3,701	5,578	301
2002	5,935	2,540	3,395	2,202	3,733	5,632	303
2003	5,969	2,566	3,403	2,222	3,747	5,664	305
			Low alternative projections				
1992	5,184	2,171	3,013	1,863	3,321	4,923	261
1993	5,218	2,160	3,058	1,864	3,354	4,956	262
1994	5,195	2,140	3,055	1,832	3,363	4,936	259
1995	5,259	2,164	3,095	1,880	3,379	4,995	264
1996	5,298	2,182	3,116	1,903	3,395	5,032	266
1997	5,342	2,204	3,138	1,925	3,417	5,073	269
1998	5,403	2,235	3,168	1,961	3,442	5,129	274
1999	5,465	2,270	3,195	2,002	3,463	5,187	278
2000	5,510	2,296	3,214	2,030	3,480	5,229	281
2001	5,548	2,321	3,227	2,058	3,490	5,265	283
2002	5,572	2,340	3,232	2,080	3,492	5,286	286
2003	5,592	2,354	3,238	2,095	3,497	5,305	287
			High alternative projections				
1992	5,369	2,242	3,127	1,926	3,443	5,100	269
1993	5,455	2,256	3,199	1,950	3,505	5,181	274
1994	5,485	2,252	3,233	1,926	3,559	5,212	273
1995	5,609	2,309	3,300	1,995	3,614	5,328	281
1996	5,677	2,344	3,333	2,025	3,652	5,393	284
1997	5,763	2,393	3,370	2,064	3,699	5,474	289
1998	5,872	2,454	3,418	2,124	3,748	5,576	296
1999	5,971	2,509	3,462	2,176	3,795	5,667	304
2000	6,044	2,557	3,487	2,217	3,827	5,737	307
2001	6,095	2,603	3,492	2,257	3,838	5,783	312
2002	6,151	2,635	3,516	2,278	3,873	5,836	315
2003	6,196	2,670	3,526	2,305	3,891	5,879	317

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 6.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with middle alternative projections: 50 States and D.C., fall 1983, 1988, 1991, 1998, and 2003

(In thousands)

Age	1983 (Estimated)			1988 (Estimated)			1991 (Projected)			1998 (Projected)			2003 (Projected)		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	**12,465**	**7,261**	**5,204**	**13,055**	**7,437**	**5,619**	**14,169**	**8,033**	**6,137**	**15,167**	**8,542**	**6,625**	**16,124**	**9,327**	**6,796**
14 to 17 years	244	212	31	169	148	22	172	145	27	225	194	31	255	222	33
18 to 19 years	2,752	2,415	338	2,826	2,498	327	2,797	2,478	319	3,091	2,705	386	3,367	2,936	431
20 to 21 years	2,366	1,956	409	2,521	2,087	433	2,743	2,228	515	2,771	2,214	557	3,218	2,569	648
22 to 24 years	2,042	1,282	760	2,038	1,257	781	2,226	1,424	802	2,286	1,496	790	2,631	1,709	922
25 to 29 years	2,061	780	1,281	1,807	688	1,119	2,043	805	1,238	2,019	843	1,176	1,913	822	1,092
30 to 34 years	1,291	354	937	1,314	360	955	1,425	420	1,004	1,350	423	927	1,295	404	891
35 years and over	1,708	261	1,447	2,379	398	1,981	2,764	533	2,231	3,423	666	2,757	3,446	667	2,780
Men	6,024	3,760	2,264	6,002	3,662	2,340	6,412	3,890	2,522	6,794	4,069	2,725	7,386	4,507	2,879
14 to 17 years	102	86	16	55	50	5	79	66	12	117	103	14	142	127	15
18 to 19 years	1,256	1,098	158	1,290	1,158	132	1,352	1,211	141	1,458	1,289	170	1,580	1,391	189
20 to 21 years	1,241	1,035	205	1,243	1,028	216	1,366	1,109	257	1,355	1,064	292	1,587	1,237	350
22 to 24 years	1,158	776	382	1,106	728	378	1,123	766	358	1,176	824	352	1,372	952	420
25 to 29 years	1,115	491	624	875	390	485	960	407	552	926	428	498	895	435	460
30 to 34 years	570	185	384	617	161	456	592	163	429	540	149	391	514	142	372
35 years and over	583	88	494	816	148	668	940	168	772	1,220	212	1,008	1,297	224	1,073
Women	6,441	3,501	2,940	7,053	3,775	3,278	7,757	4,142	3,615	8,373	4,473	3,900	8,738	4,820	3,918
14 to 17 years	142	126	16	115	98	17	93	79	15	108	91	17	113	96	18
18 to 19 years	1,496	1,317	179	1,536	1,341	195	1,445	1,267	178	1,632	1,416	216	1,787	1,544	243
20 to 21 years	1,125	921	204	1,278	1,060	218	1,377	1,119	258	1,416	1,151	265	1,631	1,333	298
22 to 24 years	884	506	378	932	529	403	1,103	658	445	1,110	672	438	1,259	757	502
25 to 29 years	947	289	658	932	299	633	1,083	397	686	1,093	415	678	1,018	386	632
30 to 34 years	721	169	553	698	199	499	833	257	576	810	274	536	781	262	519
35 years and over	1,126	173	953	1,563	251	1,313	1,824	365	1,459	2,203	454	1,749	2,149	443	1,707

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys; and U.S. Department of Commerce, Bureau of the Census, Unpublished tabulations. (This table was prepared June 1992.)

Table 7.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with low alternative projections: 50 States and D.C., fall 1983, 1988, 1991, 1998, and 2003

(In thousands)

Age	1983 (Estimated)			1988 (Estimated)			1991 (Projected)			1998 (Projected)			2003 (Projected)		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	**12,465**	**7,261**	**5,204**	**13,055**	**7,437**	**5,619**	**14,169**	**8,033**	**6,137**	**14,380**	**8,113**	**6,267**	**15,085**	**8,767**	**6,318**
14 to 17 years	244	212	31	169	148	22	172	145	27	194	165	29	210	179	31
18 to 19 years	2,752	2,415	338	2,826	2,498	327	2,797	2,478	319	3,031	2,658	373	3,253	2,845	408
20 to 21 years	2,366	1,956	409	2,521	2,087	433	2,743	2,228	515	2,662	2,125	537	3,034	2,412	622
22 to 24 years	2,042	1,282	760	2,038	1,257	781	2,226	1,424	802	2,123	1,376	748	2,467	1,607	860
25 to 29 years	2,061	780	1,281	1,807	688	1,119	2,043	805	1,238	1,919	772	1,147	1,805	735	1,070
30 to 34 years	1,291	354	937	1,314	360	955	1,425	420	1,004	1,294	404	890	1,235	385	850
35 years and over	1,708	261	1,447	2,379	398	1,981	2,764	533	2,231	3,157	615	2,542	3,081	602	2,479
Men	6,024	3,760	2,264	6,002	3,662	2,340	6,412	3,890	2,522	6,362	3,826	2,536	6,774	4,190	2,584
14 to 17 years	102	86	16	55	50	5	79	66	12	95	82	14	107	93	14
18 to 19 years	1,256	1,098	158	1,290	1,158	132	1,352	1,211	141	1,430	1,261	169	1,534	1,346	188
20 to 21 years	1,241	1,035	205	1,243	1,028	216	1,366	1,109	257	1,298	1,016	281	1,490	1,154	336
22 to 24 years	1,158	776	382	1,106	728	378	1,123	766	358	1,071	740	331	1,274	890	384
25 to 29 years	1,115	491	624	875	390	485	960	407	552	885	388	496	835	378	457
30 to 34 years	570	185	384	617	161	456	592	163	429	529	149	381	505	142	363
35 years and over	583	88	494	816	148	668	940	168	772	1,055	190	864	1,030	187	842
Women	6,441	3,501	2,940	7,053	3,775	3,278	7,757	4,142	3,615	8,018	4,287	3,731	8,311	4,577	3,734
14 to 17 years	142	126	16	115	98	17	93	79	15	99	83	16	103	87	16
18 to 19 years	1,496	1,317	179	1,536	1,341	195	1,445	1,267	178	1,601	1,397	204	1,719	1,500	220
20 to 21 years	1,125	921	204	1,278	1,060	218	1,377	1,119	258	1,365	1,109	256	1,544	1,258	286
22 to 24 years	884	506	378	932	529	403	1,103	658	445	1,053	636	417	1,192	717	476
25 to 29 years	947	289	658	932	299	633	1,083	397	686	1,035	384	651	970	358	613
30 to 34 years	721	169	553	698	199	499	833	257	576	764	255	510	730	243	487
35 years and over	1,126	173	953	1,563	251	1,313	1,824	365	1,459	2,102	424	1,678	2,051	414	1,637

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys; and U.S. Department of Commerce, Bureau of the Census, Unpublished tabulations. (This table was prepared June 1992.)

Table 8.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with high alternative projections: 50 States and D.C., fall 1983, 1988, 1991, 1998, and 2003

(In thousands)

Age	1983 (Estimated)			1988 (Estimated)			1991 (Projected)			1998 (Projected)			2003 (Projected)		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	**12,465**	**7,261**	**5,204**	**13,055**	**7,437**	**5,619**	**14,169**	**8,033**	**6,137**	**15,673**	**8,821**	**6,852**	**16,737**	**9,661**	**7,076**
14 to 17 years	244	212	31	169	148	22	172	145	27	233	197	37	267	227	40
18 to 19 years	2,752	2,415	338	2,826	2,498	327	2,797	2,478	319	3,175	2,789	386	3,473	3,041	431
20 to 21 years	2,366	1,956	409	2,521	2,087	433	2,743	2,228	515	2,838	2,274	563	3,315	2,658	657
22 to 24 years	2,042	1,282	760	2,038	1,257	781	2,226	1,424	802	2,370	1,564	806	2,709	1,765	944
25 to 29 years	2,061	780	1,281	1,807	688	1,119	2,043	805	1,238	2,077	843	1,234	1,982	822	1,160
30 to 34 years	1,291	354	937	1,314	360	955	1,425	420	1,004	1,364	423	941	1,308	404	905
35 years and over	1,708	261	1,447	2,379	398	1,981	2,764	533	2,231	3,617	730	2,886	3,680	742	2,938
Men	6,024	3,760	2,264	6,002	3,662	2,340	6,412	3,890	2,522	7,018	4,213	2,805	7,672	4,677	2,995
14 to 17 years	102	86	16	55	50	5	79	66	12	118	103	15	143	127	16
18 to 19 years	1,256	1,098	158	1,290	1,158	132	1,352	1,211	141	1,527	1,357	170	1,671	1,482	189
20 to 21 years	1,241	1,035	205	1,243	1,028	216	1,366	1,109	257	1,374	1,075	298	1,613	1,255	359
22 to 24 years	1,158	776	382	1,106	728	378	1,123	766	358	1,211	855	356	1,393	967	426
25 to 29 years	1,115	491	624	875	390	485	960	407	552	926	428	498	895	435	460
30 to 34 years	570	185	384	617	161	456	592	163	429	554	149	405	528	142	386
35 years and over	583	88	494	816	148	668	940	168	772	1,309	245	1,063	1,428	269	1,159
Women	6,441	3,501	2,940	7,053	3,775	3,278	7,757	4,142	3,615	8,655	4,608	4,047	9,065	4,984	4,081
14 to 17 years	142	126	16	115	98	17	93	79	15	116	94	22	124	100	24
18 to 19 years	1,496	1,317	179	1,536	1,341	195	1,445	1,267	178	1,649	1,433	216	1,802	1,560	243
20 to 21 years	1,125	921	204	1,278	1,060	218	1,377	1,119	258	1,464	1,199	265	1,702	1,403	298
22 to 24 years	884	506	378	932	529	403	1,103	658	445	1,159	709	450	1,316	799	518
25 to 29 years	947	289	658	932	299	633	1,083	397	686	1,150	415	736	1,087	386	701
30 to 34 years	721	169	553	698	199	499	833	257	576	810	274	536	781	262	519
35 years and over	1,126	173	953	1,563	251	1,313	1,824	365	1,459	2,308	485	1,823	2,252	473	1,779

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys; and U.S. Department of Commerce, Bureau of the Census, Unpublished tabulations. (This table was prepared June 1992.)

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Table 9.—Total enrollment in all institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	11,260	3,527	2,113	3,140	2,479
1979	11,570	3,544	2,142	3,249	2,636
1980	12,097	3,689	2,185	3,409	2,814
1981	12,372	3,714	2,262	3,469	2,927
1982	12,426	3,753	2,278	3,468	2,927
1983	12,465	3,760	2,264	3,501	2,940
1984	12,242	3,648	2,216	3,451	2,927
1985	12,247	3,608	2,211	3,468	2,961
1986	12,504	3,599	2,285	3,521	3,098
1987	12,767	3,611	2,321	3,620	3,214
1988	13,055	3,662	2,340	3,775	3,278
1989	13,539	3,740	2,450	3,921	3,428
1990	13,710	3,791	2,447	3,989	3,483
1991 *	14,169	3,890	2,522	4,142	3,615
		Middle alternative projections			
1992	14,276	3,851	2,544	4,197	3,684
1993	14,431	3,826	2,574	4,271	3,760
1994	14,373	3,762	2,593	4,199	3,819
1995	14,591	3,851	2,620	4,280	3,840
1996	14,739	3,903	2,648	4,321	3,867
1997	14,922	3,973	2,685	4,382	3,882
1998	15,167	4,069	2,725	4,473	3,900
1999	15,431	4,194	2,762	4,561	3,914
2000	15,634	4,275	2,796	4,641	3,922
2001	15,814	4,369	2,825	4,718	3,902
2002	15,993	4,447	2,853	4,771	3,922
2003	16,124	4,507	2,879	4,820	3,918
		Low alternative projections			
1992	13,910	3,764	2,493	4,071	3,582
1993	13,961	3,713	2,498	4,108	3,642
1994	13,852	3,634	2,495	4,061	3,662
1995	14,014	3,689	2,500	4,145	3,680
1996	14,095	3,715	2,508	4,176	3,696
1997	14,215	3,757	2,522	4,222	3,714
1998	14,380	3,826	2,536	4,287	3,731
1999	14,577	3,919	2,550	4,362	3,746
2000	14,737	3,992	2,562	4,434	3,749
2001	14,879	4,071	2,571	4,490	3,747
2002	14,990	4,139	2,577	4,534	3,740
2003	15,085	4,190	2,584	4,577	3,734
		High alternative projections			
1992	14,435	3,893	2,583	4,239	3,720
1993	14,636	3,890	2,618	4,320	3,808
1994	14,642	3,826	2,644	4,289	3,883
1995	14,964	3,955	2,676	4,384	3,949
1996	15,127	4,004	2,714	4,429	3,980
1997	15,369	4,096	2,760	4,498	4,015
1998	15,673	4,213	2,805	4,608	4,047
1999	15,965	4,324	2,851	4,712	4,078
2000	16,204	4,425	2,891	4,802	4,086
2001	16,401	4,523	2,929	4,884	4,065
2002	16,575	4,596	2,962	4,933	4,084
2003	16,737	4,677	2,995	4,984	4,081

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 10.—Total enrollment in public 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	4,912	1,822	687	1,613	789
1979	4,980	1,833	676	1,661	810
1980	5,129	1,873	685	1,719	851
1981	5,166	1,877	692	1,741	858
1982	5,176	1,889	698	1,734	855
1983	5,223	1,910	698	1,755	860
1984	5,198	1,880	694	1,749	874
1985	5,210	1,864	693	1,760	893
1986	5,300	1,865	706	1,792	937
1987	5,432	1,882	723	1,854	973
1988	5,546	1,910	722	1,932	982
1989	5,694	1,938	743	1,997	1,017
1990	5,803	1,972	755	2,036	1,039
1991*	6,038	2,027	799	2,112	1,100
		Middle alternative projections			
1992	6,076	2,010	806	2,138	1,122
1993	6,130	1,996	818	2,170	1,146
1994	6,085	1,962	825	2,134	1,164
1995	6,177	2,004	833	2,170	1,170
1996	6,235	2,028	840	2,190	1,177
1997	6,317	2,064	851	2,222	1,180
1998	6,428	2,114	861	2,270	1,183
1999	6,552	2,179	871	2,317	1,185
2000	6,649	2,223	879	2,362	1,185
2001	6,742	2,273	886	2,404	1,179
2002	6,825	2,315	894	2,434	1,182
2003	6,891	2,348	902	2,461	1,180
		Low alternative projections			
1992	5,917	1,963	790	2,073	1,091
1993	5,925	1,935	792	2,088	1,110
1994	5,866	1,893	792	2,065	1,116
1995	5,935	1,918	792	2,105	1,120
1996	5,965	1,928	794	2,119	1,124
1997	6,016	1,949	795	2,143	1,129
1998	6,090	1,984	797	2,177	1,132
1999	6,183	2,032	799	2,217	1,135
2000	6,263	2,073	799	2,257	1,134
2001	6,336	2,116	800	2,289	1,131
2002	6,395	2,152	801	2,313	1,129
2003	6,447	2,182	802	2,337	1,126
		High alternative projections			
1992	6,145	2,032	819	2,161	1,133
1993	6,219	2,029	832	2,197	1,161
1994	6,201	1,995	842	2,180	1,184
1995	6,337	2,057	851	2,225	1,204
1996	6,402	2,080	862	2,247	1,213
1997	6,509	2,127	875	2,284	1,223
1998	6,645	2,185	888	2,341	1,231
1999	6,778	2,242	901	2,397	1,238
2000	6,891	2,295	911	2,447	1,238
2001	6,992	2,347	921	2,492	1,232
2002	7,072	2,387	931	2,520	1,234
2003	7,152	2,431	941	2,548	1,232

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 11.—Total enrollment in public 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	3,874	738	1,084	700	1,351
1979	4,057	739	1,123	728	1,468
1980	4,329	812	1,152	784	1,581
1981	4,481	827	1,192	803	1,658
1982	4,520	851	1,195	810	1,664
1983	4,459	827	1,175	807	1,650
1984	4,279	762	1,138	756	1,623
1985	4,270	743	1,138	754	1,635
1986	4,414	742	1,193	764	1,715
1987	4,541	744	1,225	787	1,785
1988	4,615	746	1,231	822	1,817
1989	4,884	793	1,302	881	1,907
1990	4,937	806	1,297	900	1,934
1991 *	5,002	808	1,296	918	1,980
			Middle alternative projections		
1992	5,046	793	1,307	931	2,015
1993	5,112	787	1,319	951	2,055
1994	5,121	773	1,327	934	2,087
1995	5,199	798	1,341	960	2,100
1996	5,259	814	1,357	972	2,116
1997	5,320	830	1,378	985	2,127
1998	5,398	851	1,402	1,005	2,140
1999	5,477	879	1,424	1,023	2,151
2000	5,537	895	1,445	1,037	2,160
2001	5,578	915	1,463	1,052	2,148
2002	5,632	929	1,479	1,060	2,164
2003	5,664	939	1,494	1,068	2,163
			Low alternative projections		
1992	4,923	778	1,281	904	1,960
1993	4,956	767	1,282	916	1,991
1994	4,936	751	1,280	903	2,002
1995	4,995	769	1,284	928	2,014
1996	5,032	780	1,290	938	2,024
1997	5,073	790	1,300	948	2,035
1998	5,129	807	1,312	963	2,047
1999	5,187	829	1,323	978	2,057
2000	5,229	842	1,334	991	2,062
2001	5,265	858	1,342	1,001	2,064
2002	5,286	870	1,347	1,008	2,061
2003	5,305	877	1,354	1,015	2,059
			High alternative projections		
1992	5,100	801	1,326	938	2,035
1993	5,181	800	1,340	960	2,081
1994	5,212	785	1,352	953	2,122
1995	5,328	821	1,369	980	2,158
1996	5,393	835	1,389	993	2,176
1997	5,474	856	1,414	1,008	2,196
1998	5,576	886	1,441	1,032	2,217
1999	5,667	911	1,467	1,053	2,236
2000	5,737	933	1,491	1,069	2,244
2001	5,783	954	1,513	1,084	2,232
2002	5,836	966	1,531	1,091	2,248
2003	5,879	982	1,549	1,100	2,248

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 12.—Total enrollment in private 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	2,320	919	327	755	319
1979	2,373	924	329	784	336
1980	2,442	936	333	816	357
1981	2,489	939	344	830	376
1982	2,478	933	341	824	380
1983	2,518	935	350	834	399
1984	2,512	926	346	839	401
1985	2,506	917	342	844	403
1986	2,524	910	343	856	415
1987	2,558	908	346	878	426
1988	2,634	933	347	918	436
1989	2,693	933	360	938	463
1990	2,726	943	361	957	466
1991 *	2,862	978	388	1,003	493
		Middle alternative projections			
1992	2,887	973	392	1,018	504
1993	2,918	968	398	1,037	515
1994	2,899	954	402	1,020	523
1995	2,940	973	406	1,036	525
1996	2,968	984	411	1,044	529
1997	3,003	1,000	415	1,058	530
1998	3,053	1,023	420	1,079	531
1999	3,110	1,053	425	1,100	532
2000	3,151	1,072	429	1,119	531
2001	3,193	1,094	432	1,138	529
2002	3,233	1,115	436	1,152	530
2003	3,264	1,131	439	1,165	529
		Low alternative projections			
1992	2,809	949	384	987	489
1993	2,818	938	386	996	498
1994	2,791	919	385	986	501
1995	2,820	929	386	1,002	503
1996	2,832	933	386	1,008	505
1997	2,857	943	388	1,019	507
1998	2,887	958	388	1,033	508
1999	2,929	979	389	1,051	510
2000	2,964	997	389	1,069	509
2001	2,995	1,016	389	1,082	508
2002	3,023	1,034	389	1,094	506
2003	3,046	1,048	388	1,105	505
		High alternative projections			
1992	2,921	984	399	1,029	509
1993	2,962	985	406	1,049	522
1994	2,956	971	410	1,043	532
1995	3,018	999	415	1,063	541
1996	3,048	1,010	422	1,071	545
1997	3,097	1,032	429	1,087	549
1998	3,156	1,058	433	1,113	552
1999	3,216	1,084	439	1,137	556
2000	3,269	1,108	445	1,160	556
2001	3,314	1,131	450	1,180	553
2002	3,352	1,151	454	1,193	554
2003	3,389	1,171	459	1,206	553

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 13.—Total enrollment in private 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	154	48	15	72	20
1979	160	48	14	76	22
1980	198	68	15	90	24
1981	236	71	34	95	35
1982	252	80	45	99	28
1983	264	88	41	105	30
1984	252	79	37	106	29
1985	261	84	38	110	30
1986	266	83	43	108	32
1987	235	76	30	102	29
1988	260	73	40	103	44
1989	267	76	45	105	41
1990	243	71	34	96	43
1991[*]	267	77	39	109	42
		Middle alternative projections			
1992	267	75	39	110	43
1993	271	75	39	113	44
1994	268	73	39	111	45
1995	275	76	40	114	45
1996	277	77	40	115	45
1997	282	79	41	117	45
1998	288	81	42	119	46
1999	292	83	42	121	46
2000	297	85	43	123	46
2001	301	87	44	124	46
2002	303	88	44	125	46
2003	305	89	44	126	46
		Low alternative projections			
1992	261	74	38	107	42
1993	262	73	38	108	43
1994	259	71	38	107	43
1995	264	73	38	110	43
1996	266	74	38	111	43
1997	269	75	39	112	43
1998	274	77	39	114	44
1999	278	79	39	116	44
2000	281	80	40	117	44
2001	283	81	40	118	44
2002	286	83	40	119	44
2003	287	83	40	120	44
		High alternative projections			
1992	269	76	39	111	43
1993	274	76	40	114	44
1994	273	75	40	113	45
1995	281	78	41	116	46
1996	284	79	41	118	46
1997	289	81	42	119	47
1998	296	84	43	122	47
1999	304	87	44	125	48
2000	307	89	44	126	48
2001	312	91	45	128	48
2002	315	92	46	129	48
2003	317	93	46	130	48

[*] Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 14.—Undergraduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	9,691	3,072	1,694	2,895	2,030
1979	9,998	3,087	1,734	2,993	2,185
1980	10,475	3,227	1,773	3,135	2,340
1981	10,755	3,261	1,848	3,188	2,458
1982	10,825	3,299	1,871	3,184	2,470
1983	10,846	3,304	1,854	3,210	2,478
1984	10,618	3,195	1,812	3,153	2,459
1985	10,597	3,156	1,806	3,163	2,471
1986	10,798	3,146	1,871	3,206	2,575
1987	11,046	3,164	1,905	3,299	2,679
1988	11,317	3,206	1,931	3,436	2,743
1989	11,742	3,279	2,032	3,562	2,869
1990	11,863	3,322	2,017	3,619	2,905
1991 *	12,163	3,404	2,048	3,715	2,996
Middle alternative projections					
1992	12,215	3,356	2,065	3,743	3,051
1993	12,307	3,322	2,086	3,787	3,112
1994	12,230	3,255	2,099	3,717	3,159
1995	12,443	3,342	2,119	3,806	3,176
1996	12,582	3,392	2,141	3,852	3,197
1997	12,755	3,457	2,172	3,916	3,210
1998	12,992	3,549	2,205	4,011	3,227
1999	13,245	3,667	2,237	4,100	3,241
2000	13,447	3,747	2,267	4,182	3,251
2001	13,623	3,836	2,293	4,259	3,235
2002	13,787	3,906	2,317	4,309	3,255
2003	13,909	3,959	2,340	4,356	3,254
Low alternative projections					
1992	11,911	3,284	2,024	3,637	2,966
1993	11,927	3,229	2,027	3,657	3,014
1994	11,812	3,150	2,023	3,610	3,029
1995	11,980	3,209	2,026	3,701	3,044
1996	12,066	3,238	2,033	3,738	3,057
1997	12,184	3,280	2,046	3,786	3,072
1998	12,353	3,350	2,060	3,855	3,088
1999	12,548	3,442	2,074	3,931	3,101
2000	12,710	3,513	2,088	4,003	3,106
2001	12,853	3,589	2,097	4,060	3,107
2002	12,961	3,651	2,105	4,102	3,103
2003	13,052	3,695	2,114	4,143	3,100
High alternative projections					
1992	12,345	3,389	2,095	3,780	3,081
1993	12,476	3,374	2,120	3,831	3,151
1994	12,447	3,305	2,138	3,793	3,211
1995	12,750	3,430	2,163	3,893	3,264
1996	12,900	3,474	2,192	3,945	3,289
1997	13,123	3,559	2,229	4,017	3,318
1998	13,415	3,672	2,267	4,130	3,346
1999	13,693	3,778	2,306	4,235	3,374
2000	13,924	3,875	2,340	4,326	3,383
2001	14,116	3,968	2,373	4,408	3,367
2002	14,275	4,032	2,401	4,455	3,387
2003	14,423	4,104	2,429	4,503	3,387

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 15.—Undergraduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	7,786	2,302	1,510	2,161	1,813
1979	8,046	2,316	1,551	2,229	1,952
1980	8,441	2,426	1,588	2,334	2,093
1981	8,648	2,452	1,639	2,373	2,185
1982	8,713	2,487	1,653	2,373	2,201
1983	8,697	2,482	1,635	2,385	2,195
1984	8,494	2,390	1,600	2,325	2,179
1985	8,478	2,357	1,596	2,331	2,193
1986	8,661	2,351	1,652	2,367	2,291
1987	8,919	2,375	1,701	2,449	2,393
1988	9,103	2,399	1,714	2,550	2,439
1989	9,488	2,470	1,801	2,663	2,553
1990	9,615	2,513	1,799	2,715	2,588
1991 *	9,816	2,561	1,817	2,774	2,664
		Middle alternative projections			
1992	9,865	2,524	1,832	2,797	2,712
1993	9,947	2,499	1,851	2,831	2,766
1994	9,898	2,449	1,862	2,779	2,808
1995	10,065	2,515	1,880	2,846	2,824
1996	10,178	2,554	1,900	2,881	2,843
1997	10,315	2,603	1,928	2,928	2,856
1998	10,499	2,672	1,958	2,998	2,871
1999	10,696	2,761	1,987	3,064	2,884
2000	10,852	2,820	2,014	3,124	2,894
2001	10,984	2,887	2,037	3,181	2,879
2002	11,113	2,939	2,059	3,217	2,898
2003	11,206	2,978	2,080	3,251	2,897
		Low alternative projections			
1992	9,620	2,470	1,796	2,717	2,637
1993	9,640	2,429	1,798	2,734	2,679
1994	9,557	2,371	1,795	2,698	2,693
1995	9,688	2,416	1,798	2,767	2,707
1996	9,758	2,439	1,805	2,795	2,719
1997	9,849	2,470	1,816	2,830	2,733
1998	9,981	2,523	1,830	2,881	2,747
1999	10,131	2,592	1,843	2,937	2,759
2000	10,254	2,645	1,855	2,990	2,764
2001	10,363	2,702	1,864	3,032	2,765
2002	10,442	2,747	1,871	3,062	2,762
2003	10,511	2,780	1,880	3,092	2,759
		High alternative projections			
1992	9,971	2,549	1,859	2,824	2,739
1993	10,083	2,538	1,880	2,864	2,801
1994	10,074	2,486	1,897	2,836	2,855
1995	10,314	2,582	1,919	2,911	2,902
1996	10,436	2,616	1,945	2,950	2,925
1997	10,613	2,680	1,978	3,004	2,951
1998	10,843	2,766	2,013	3,087	2,977
1999	11,058	2,845	2,048	3,164	3,001
2000	11,238	2,918	2,079	3,231	3,010
2001	11,382	2,988	2,108	3,291	2,995
2002	11,507	3,035	2,133	3,325	3,014
2003	11,622	3,090	2,158	3,360	3,014

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 16.—Undergraduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	1,905	770	184	734	217
1979	1,951	772	184	762	233
1980	2,033	800	185	801	246
1981	2,106	809	209	816	272
1982	2,112	812	219	811	270
1983	2,149	823	219	824	283
1984	2,124	805	212	827	280
1985	2,120	800	210	832	278
1986	2,137	796	219	839	284
1987	2,128	788	204	850	286
1988	2,213	807	217	886	304
1989	2,255	808	231	899	316
1990	2,248	810	217	904	317
1991 *	2,347	843	231	941	332
Middle alternative projections					
1992	2,350	832	233	946	339
1993	2,360	823	235	956	346
1994	2,332	806	237	938	351
1995	2,378	827	239	960	352
1996	2,404	838	241	971	354
1997	2,440	854	244	988	354
1998	2,493	877	247	1,013	356
1999	2,549	906	250	1,036	357
2000	2,595	927	253	1,058	357
2001	2,639	949	256	1,078	356
2002	2,674	967	258	1,092	357
2003	2,703	981	260	1,105	357
Low alternative projections					
1992	2,291	814	228	920	329
1993	2,287	800	229	923	335
1994	2,255	779	228	912	336
1995	2,292	793	228	934	337
1996	2,308	799	228	943	338
1997	2,335	810	230	956	339
1998	2,372	827	230	974	341
1999	2,417	850	231	994	342
2000	2,456	868	233	1,013	342
2001	2,490	887	233	1,028	342
2002	2,519	904	234	1,040	341
2003	2,541	915	234	1,051	341
High alternative projections					
1992	2,374	840	236	956	342
1993	2,393	836	240	967	350
1994	2,373	819	241	957	356
1995	2,436	848	244	982	362
1996	2,464	858	247	995	364
1997	2,510	879	251	1,013	367
1998	2,572	906	254	1,043	369
1999	2,635	933	258	1,071	373
2000	2,686	957	261	1,095	373
2001	2,734	980	265	1,117	372
2002	2,768	997	268	1,130	373
2003	2,801	1,014	271	1,143	373

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 17.—Graduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	1,312	280	402	188	442
1979	1,309	280	389	196	444
1980	1,343	281	394	204	466
1981	1,343	277	397	207	462
1982	1,322	280	390	205	447
1983	1,340	286	391	211	452
1984	1,345	286	386	215	459
1985	1,376	289	388	220	479
1986	1,435	294	399	228	514
1987	1,452	294	400	233	525
1988	1,472	304	393	249	526
1989	1,522	309	401	263	548
1990	1,574	320	413	274	567
1991 *	1,703	326	455	314	608
		Middle alternative projections			
1992	1,746	331	460	334	621
1993	1,796	337	468	355	636
1994	1,817	340	474	355	648
1995	1,822	340	481	349	652
1996	1,831	342	487	345	657
1997	1,839	345	492	343	659
1998	1,847	348	499	340	660
1999	1,856	353	504	339	660
2000	1,857	354	508	337	658
2001	1,859	357	511	337	654
2002	1,871	362	515	340	654
2003	1,877	367	517	341	652
		Low alternative projections			
1992	1,695	321	450	319	605
1993	1,724	324	452	331	617
1994	1,729	324	453	331	621
1995	1,726	321	455	326	624
1996	1,724	319	456	322	627
1997	1,726	319	457	320	630
1998	1,724	318	457	318	631
1999	1,726	319	457	317	633
2000	1,724	321	455	317	631
2001	1,721	322	455	316	628
2002	1,722	326	453	318	625
2003	1,723	331	451	319	622
		High alternative projections			
1992	1,769	337	468	337	627
1993	1,828	345	478	360	645
1994	1,859	349	486	365	659
1995	1,876	351	492	361	672
1996	1,888	354	501	355	678
1997	1,906	359	510	354	683
1998	1,917	362	517	351	687
1999	1,928	365	523	350	690
2000	1,934	368	528	349	689
2001	1,937	371	533	349	684
2002	1,950	378	538	351	683
2003	1,961	383	543	354	681

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 18.—Graduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	894	183	258	127	326
1979	884	182	246	133	325
1980	900	180	245	137	337
1981	887	177	242	138	329
1982	870	180	237	136	317
1983	872	184	235	140	313
1984	870	182	229	142	317
1985	891	181	232	144	333
1986	941	188	244	150	358
1987	945	185	244	152	364
1988	949	193	236	163	357
1989	978	195	242	171	369
1990	1,013	202	250	177	384
1991 *	1,099	206	275	204	414
Middle alternative projections					
1992	1,127	209	278	217	423
1993	1,160	213	283	231	433
1994	1,174	215	287	231	441
1995	1,177	215	291	227	444
1996	1,181	216	294	224	447
1997	1,187	218	298	223	448
1998	1,192	220	302	221	449
1999	1,197	223	305	220	449
2000	1,198	224	307	219	448
2001	1,199	226	309	219	445
2002	1,206	229	311	221	445
2003	1,211	232	313	222	444
Low alternative projections					
1992	1,094	203	272	207	412
1993	1,113	205	273	215	420
1994	1,117	205	274	215	423
1995	1,115	203	275	212	425
1996	1,114	202	276	209	427
1997	1,115	202	276	208	429
1998	1,114	201	276	207	430
1999	1,115	202	276	206	431
2000	1,114	203	275	206	430
2001	1,113	204	275	206	428
2002	1,113	206	274	207	426
2003	1,113	209	273	207	424
High alternative projections					
1992	1,142	213	283	219	427
1993	1,180	218	289	234	439
1994	1,200	221	294	237	448
1995	1,212	222	298	235	457
1996	1,219	224	303	231	461
1997	1,230	227	308	230	465
1998	1,238	229	313	228	468
1999	1,246	231	317	228	470
2000	1,248	233	319	227	469
2001	1,250	235	322	227	466
2002	1,257	239	325	228	465
2003	1,263	242	328	230	463

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 19.—Graduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	418	97	144	61	116
1979	424	98	144	63	119
1980	442	100	147	67	128
1981	456	100	155	69	132
1982	453	100	153	69	131
1983	468	103	156	71	138
1984	476	104	156	75	142
1985	486	108	156	76	147
1986	494	106	155	78	156
1987	507	108	156	82	161
1988	522	111	157	86	168
1989	544	114	159	92	179
1990	561	118	163	97	183
1991 *	604	120	180	110	194
Middle alternative projections					
1992	619	122	182	117	198
1993	636	124	185	124	203
1994	643	125	187	124	207
1995	645	125	190	122	208
1996	650	126	193	121	210
1997	652	127	194	120	211
1998	655	128	197	119	211
1999	659	130	199	119	211
2000	659	130	201	118	210
2001	660	131	202	118	209
2002	665	133	204	119	209
2003	666	135	204	119	208
Low alternative projections					
1992	601	118	178	112	193
1993	611	119	179	116	197
1994	612	119	179	116	198
1995	611	118	180	114	199
1996	610	117	180	113	200
1997	611	117	181	112	201
1998	610	117	181	111	201
1999	611	117	181	111	202
2000	610	118	180	111	201
2001	608	118	180	110	200
2002	609	120	179	111	199
2003	610	122	178	112	198
High alternative projections					
1992	627	124	185	118	200
1993	648	127	189	126	206
1994	659	128	192	128	211
1995	664	129	194	126	215
1996	669	130	198	124	217
1997	676	132	202	124	218
1998	679	133	204	123	219
1999	682	134	206	122	220
2000	686	135	209	122	220
2001	687	136	211	122	218
2002	693	139	213	123	218
2003	698	141	215	124	218

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 20.—First-professional enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	257	175	17	58	7
1979	263	176	17	63	7
1980	278	181	18	70	9
1981	275	175	18	73	9
1982	278	174	17	78	9
1983	279	169	19	81	10
1984	279	166	19	83	10
1985	274	162	17	84	10
1986	270	159	15	87	9
1987	268	154	16	88	10
1988	267	151	16	90	10
1989	274	153	16	95	10
1990	274	150	17	96	11
1991 *	303	160	19	113	11
		Middle alternative projections			
1992	315	164	19	120	12
1993	328	167	20	129	12
1994	326	167	20	127	12
1995	326	169	20	125	12
1996	326	169	20	124	13
1997	328	171	21	123	13
1998	328	172	21	122	13
1999	330	174	21	122	13
2000	330	174	21	122	13
2001	332	176	21	122	13
2002	335	179	21	122	13
2003	338	181	22	123	12
		Low alternative projections			
1992	304	159	19	115	11
1993	310	160	19	120	11
1994	311	160	19	120	12
1995	308	159	19	118	12
1996	305	158	19	116	12
1997	305	158	19	116	12
1998	303	158	19	114	12
1999	303	158	19	114	12
2000	303	158	19	114	12
2001	305	160	19	114	12
2002	307	162	19	114	12
2003	310	164	19	115	12
		High alternative projections			
1992	321	167	20	122	12
1993	332	171	20	129	12
1994	336	172	20	131	13
1995	338	174	21	130	13
1996	339	176	21	129	13
1997	340	178	21	127	14
1998	341	179	21	127	14
1999	344	181	22	127	14
2000	346	182	23	127	14
2001	348	184	23	127	14
2002	350	186	23	127	14
2003	353	190	23	127	13

*Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 21.—First-professional enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	105	75	3	25	1
1979	106	74	2	27	1
1980	114	79	4	32	2
1981	112	75	3	33	2
1982	113	73	3	35	2
1983	113	71	3	37	2
1984	114	70	3	38	2
1985	111	69	3	38	2
1986	112	67	3	39	2
1987	110	65	3	40	2
1988	109	64	2	41	2
1989	113	65	2	43	2
1990	112	63	3	44	2
1991 *	125	68	3	52	2
Middle alternative projections					
1992	130	70	3	55	2
1993	135	71	3	59	2
1994	134	71	3	58	2
1995	134	72	3	57	2
1996	135	72	3	57	3
1997	135	73	3	56	3
1998	135	73	3	56	3
1999	136	74	3	56	3
2000	136	74	3	56	3
2001	137	75	3	56	3
2002	138	76	3	56	3
2003	138	77	3	56	2
Low alternative projections					
1992	126	68	3	53	2
1993	128	68	3	55	2
1994	128	68	3	55	2
1995	127	68	3	54	2
1996	125	67	3	53	2
1997	125	67	3	53	2
1998	124	67	3	52	2
1999	124	67	3	52	2
2000	124	67	3	52	2
2001	125	68	3	52	2
2002	126	69	3	52	2
2003	128	70	3	53	2
High alternative projections					
1992	132	71	3	56	2
1993	137	73	3	59	2
1994	139	73	3	60	3
1995	139	74	3	59	3
1996	140	75	3	59	3
1997	140	76	3	58	3
1998	140	76	3	58	3
1999	141	77	3	58	3
2000	142	77	4	58	3
2001	143	78	4	58	3
2002	144	79	4	58	3
2003	146	81	4	58	3

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 22.—First-professional enrollment in private institutions, by sex and attendance status, with alternative projections: 50 states and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1978	152	100	14	32	6
1979	157	102	15	35	6
1980	163	104	16	38	7
1981	162	101	14	40	7
1982	165	101	14	43	7
1983	165	97	16	44	8
1984	164	96	16	43	8
1985	162	93	14	46	8
1986	158	91	12	48	7
1987	158	88	14	48	8
1988	158	87	14	49	8
1989	162	87	14	52	9
1990	162	86	15	52	9
1991 *	178	92	16	61	9
		Middle alternative projections			
1992	185	94	16	65	10
1993	193	96	17	70	10
1994	192	96	17	69	10
1995	192	97	17	68	10
1996	191	97	17	67	10
1997	193	98	18	67	10
1998	193	99	18	66	10
1999	194	100	18	66	10
2000	194	100	18	66	10
2001	195	101	18	66	10
2002	197	103	18	66	10
2003	200	104	19	67	10
		Low alternative projections			
1992	178	91	16	62	9
1993	182	92	16	65	9
1994	183	92	16	65	10
1995	181	91	16	64	10
1996	180	91	16	63	10
1997	180	91	16	63	10
1998	179	91	16	62	10
1999	179	91	16	62	10
2000	179	91	16	62	10
2001	180	92	16	62	10
2002	181	93	16	62	10
2003	182	94	16	62	10
		High alternative projections			
1992	189	96	17	66	10
1993	195	98	17	70	10
1994	197	99	17	71	10
1995	199	100	18	71	10
1996	199	101	18	70	10
1997	200	102	18	69	11
1998	201	103	18	69	11
1999	203	104	19	69	11
2000	204	105	19	69	11
2001	205	106	19	69	11
2002	206	107	19	69	11
2003	207	109	19	69	10

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 23.—Full-time-equivalent enrollment in all institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1978	8,348	4,906	2,416	779	248
1979	8,487	4,989	2,471	778	249
1980	8,819	5,109	2,658	790	263
1981	9,015	5,188	2,765	801	262
1982	9,092	5,194	2,843	790	266
1983	9,166	5,254	2,841	805	266
1984	8,952	5,215	2,659	814	263
1985	8,943	5,204	2,649	829	261
1986	9,064	5,241	2,704	859	259
1987	9,230	5,363	2,743	868	256
1988	9,467	5,517	2,800	892	256
1989	9,781	5,628	2,967	922	265
1990	9,921	5,716	2,988	955	261
1991 *	10,249	5,882	3,045	1,032	290
Middle alternative projections					
1992	10,297	5,875	3,058	1,063	301
1993	10,386	5,880	3,093	1,099	314
1994	10,277	5,785	3,071	1,109	312
1995	10,465	5,908	3,138	1,107	312
1996	10,578	5,978	3,179	1,109	312
1997	10,727	6,079	3,223	1,112	313
1998	10,934	6,225	3,281	1,115	313
1999	11,165	6,387	3,342	1,121	315
2000	11,342	6,519	3,387	1,121	315
2001	11,515	6,648	3,427	1,123	317
2002	11,664	6,749	3,462	1,133	320
2003	11,780	6,832	3,486	1,139	323
Low alternative projections					
1992	10,030	5,726	2,984	1,029	291
1993	10,039	5,697	2,996	1,049	297
1994	9,919	5,604	2,967	1,051	297
1995	10,066	5,707	3,020	1,045	294
1996	10,131	5,751	3,049	1,040	291
1997	10,231	5,822	3,078	1,040	291
1998	10,376	5,927	3,123	1,037	289
1999	10,554	6,056	3,171	1,038	289
2000	10,703	6,172	3,204	1,038	289
2001	10,841	6,277	3,236	1,037	291
2002	10,952	6,360	3,258	1,041	293
2003	11,046	6 430	3,275	1,045	296
High alternative projections					
1992	10,410	5,937	3,088	1,078	307
1993	10,532	5,962	3,133	1,119	318
1994	10,473	5,888	3,127	1,136	322
1995	10,733	6,054	3,215	1,141	323
1996	10,851	6,126	3,257	1,144	324
1997	11,042	6,252	3,312	1,153	325
1998	11,296	6,424	3,389	1,157	326
1999	11,538	6,591	3,457	1,162	328
2000	11,747	6,743	3,508	1,166	330
2001	11,933	6,880	3,552	1,169	332
2002	12,073	6,975	3,585	1,179	334
2003	12,215	7,072	3,618	1,188	337

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 24.—Full-time-equivalent enrollment in public institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1978	6,279	3,375	2,283	519	101
1979	6,393	3,438	2,333	519	103
1980	6,642	3,524	2,484	522	113
1981	6,781	3,575	2,573	524	110
1982	6,851	3,597	2,630	514	110
1983	6,881	3,635	2,616	520	111
1984	6,685	3,605	2,447	521	111
1985	6,668	3,601	2,428	529	110
1986	6,778	3,629	2,483	556	110
1987	6,938	3,731	2,542	557	108
1988	7,097	3,827	2,592	571	107
1989	7,372	3,921	2,752	587	112
1990	7,498	3,989	2,791	608	110
1991 *	7,702	4,094	2,826	659	123
		Middle alternative projections			
1992	7,736	4,089	2,840	679	128
1993	7,799	4,092	2,871	703	133
1994	7,722	4,027	2,854	709	132
1995	7,865	4,111	2,914	708	132
1996	7,953	4,160	2,953	708	132
1997	8,066	4,231	2,992	711	132
1998	8,223	4,332	3,046	713	132
1999	8,397	4,445	3,103	716	133
2000	8,528	4,536	3,143	716	133
2001	8,658	4,626	3,180	718	134
2002	8,767	4,696	3,213	723	135
2003	8,852	4,753	3,235	728	136
		Low alternative projections			
1992	7,537	3,985	2,771	657	124
1993	7,544	3,965	2,782	671	126
1994	7,454	3,900	2,756	672	126
1995	7,570	3,972	2,805	668	125
1996	7,622	4,003	2,831	665	123
1997	7,697	4,051	2,858	665	123
1998	7,807	4,124	2,898	663	122
1999	7,942	4,214	2,942	664	122
2000	8,054	4,294	2,974	664	122
2001	8,157	4,367	3,003	664	123
2002	8,237	4,424	3,023	666	124
2003	8,305	4,473	3,038	668	126
		High alternative projections			
1992	7,819	4,132	2,868	689	130
1993	7,908	4,149	2,909	715	135
1994	7,865	4,098	2,905	726	136
1995	8,065	4,213	2,986	730	136
1996	8,156	4,263	3,025	731	137
1997	8,302	4,351	3,077	737	137
1998	8,494	4,471	3,147	739	137
1999	8,677	4,587	3,208	744	138
2000	8,833	4,692	3,257	745	139
2001	8,971	4,788	3,296	747	140
2002	9,074	4,854	3,326	753	141
2003	9,179	4,921	3,357	758	143

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Table 25.—Full-time-equivalent enrollment in private institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1978	2,069	1,531	133	259	146
1979	2,095	1,552	138	259	146
1980	2,177	1,585	174	268	150
1981	2,233	1,612	192	277	152
1982	2,241	1,596	213	276	156
1983	2,285	1,619	226	285	155
1984	2,267	1,610	212	293	152
1985	2,276	1,603	221	300	151
1986	2,286	1,613	221	303	149
1987	2,292	1,632	201	311	148
1988	2,370	1,690	209	321	149
1989	2,409	1,707	216	335	153
1990	2,421	1,727	197	347	151
1991 *	2,546	1,788	218	373	167
		Middle alternative projections			
1992	2,562	1,786	218	384	174
1993	2,585	1,787	221	396	181
1994	2,556	1,759	218	399	180
1995	2,600	1,797	224	399	180
1996	2,624	1,818	226	401	179
1997	2,661	1,848	230	402	181
1998	2,712	1,893	235	403	181
1999	2,769	1,943	239	405	182
2000	2,813	1,982	244	405	182
2001	2,858	2,022	247	406	183
2002	2,897	2,053	249	410	185
2003	2,928	2,079	251	411	187
		Low alternative projections			
1992	2,493	1,741	213	372	167
1993	2,494	1,732	213	378	171
1994	2,464	1,703	210	379	172
1995	2,497	1,735	215	377	170
1996	2,509	1,748	217	375	169
1997	2,535	1,771	220	375	169
1998	2,568	1,802	224	374	168
1999	2,612	1,842	228	374	168
2000	2,651	1,878	231	374	168
2001	2,685	1,910	233	373	169
2002	2,717	1,936	236	375	170
2003	2,742	1,957	237	377	171
		High alternative projections			
1992	2,591	1,805	220	389	177
1993	2,624	1,813	224	404	183
1994	2,607	1,790	222	410	185
1995	2,668	1,841	229	411	187
1996	2,694	1,863	232	412	187
1997	2,740	1,901	236	416	187
1998	2,800	1,953	242	417	188
1999	2,863	2,005	249	419	190
2000	2,915	2,051	252	421	191
2001	2,963	2,093	256	422	192
2002	3,000	2,122	259	426	193
2003	3,036	2,151	261	430	194

* Projected.

NOTE: Projections are based on data through 1990. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fall Enrollment in Colleges and Universities surveys and Integrated Postsecondary Education Data System (IPEDS) surveys. (This table was prepared June 1992.)

Chapter 3

High School Graduates

The number of high school graduates is projected to decline from 1990–91 through 1991–92 and then increase through 2002–2003. The decrease followed by an increase in the number of high school graduates reflects changes in the 18-year-old population during the same period (figure 27). Increases in the number of graduates are expected for both public and private schools.

For high school graduates statistics, the following tabulations show: (1) the average annual rate of change (in percent) for 1977–78 to 1990–91 and the projected growth rate for 1990–91 to 2002–2003; and (2) the rates of change for 1977–78 to 1984–85 and 1984–85 to 1990–91 and the projected growth rates for 1990–91 to 1996–97 and 1996–97 to 2002–2003.

Average annual rate of change (in percent)

	1977–78 to 1990–91	Projected
		1990–91 to 2002–2003
Total	-1.7	1.5
Public	-1.7	1.5
Private	-1.5	1.5

Average annual rate of change (in percent)

	1977–78 to 1984–85	1984–85 to 1990–91	Projected	
			1990–91 to 1996–97	1996–97 to 2002–2003
Total	-2.2	-1.1	1.5	1.5
Public	-2.2	-1.1	1.5	1.5
Private	-2.0	-1.0	1.5	1.5

Total High School Graduates

The number of high school graduates from public and private schools decreased from 3.1 million in 1977–78 to 2.6 million in 1985–86 (table 26 and figure 28). After 1985–86, this number increased to 2.8 million in 1987–88. Then, it decreased to about 2.5 million in 1990–91, a decrease of 20 percent from 1977–78, or an average annual rate of decline of 1.7 percent. Over the projection period, the total number of high school graduates is expected to remain around 2.5 million in 1991–92. Thereafter, it is projected to rise to 3.0 million by 2002–2003, an increase of 20 percent from 1990–91, or an average annual growth rate of 1.5 percent. During the projection period, the growth rate will be the same in the first half of the projection period (1990–91 to 1996–97) as in the second half (1996–97 to 2002–2003), 1.5 percent.

High School Graduates, by Control of Institution

The number of graduates of public high schools decreased from 2.8 million in 1977–78 to 2.4 million in 1985–86 (figure 29). Then, it increased to 2.5 million in 1987–88 before declining to about 2.3 million in 1990–91, a decrease of 20 percent from 1977–78, or an average annual rate of decline of 1.7 percent. Over the projection period, public high school graduates are projected to decrease to 2.2 million in 1991–92. Thereafter, this number is expected to increase to 2.7 million by 2002–2003, an increase of 20 percent from 1990–91, or an average annual growth rate of 1.5 percent. During the projection period, the growth rate will be the same in the first half of the projection period (1990–91 to 1996–97) as in the second half (1996–97 to 2002–2003), 1.5 percent (figure 30).

The number of graduates of private high schools is projected to decrease from 247,000 in 1990–91 to 242,000 in 1991–92 and then increase to 296,000 by 2002–2003, an increase of 20 percent from 1990–91, or an average annual growth rate of 1.5 percent. During the projection period, the growth rate will be the same in the first half of the projection period (1990–91 to 1996–97) as in the second half (1996–97 to 2002–2003), 1.5 percent.

Figure 27
18-year-old population, with projections: 1978 to 2003

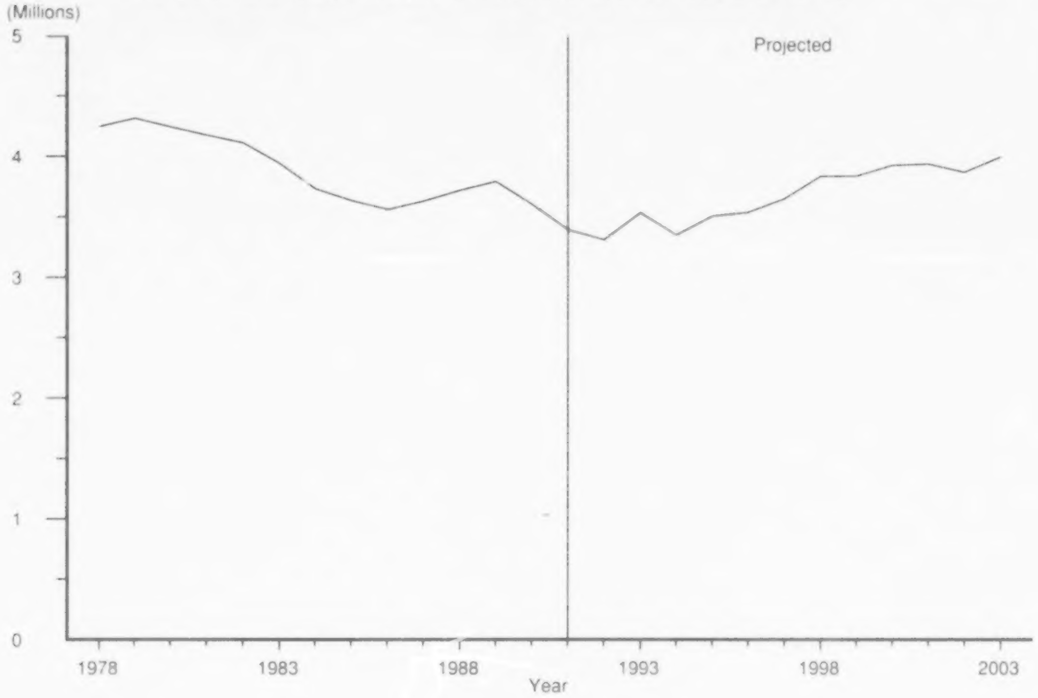

Figure 28
High school graduates, with projections: 1977-78 to 2002-2003

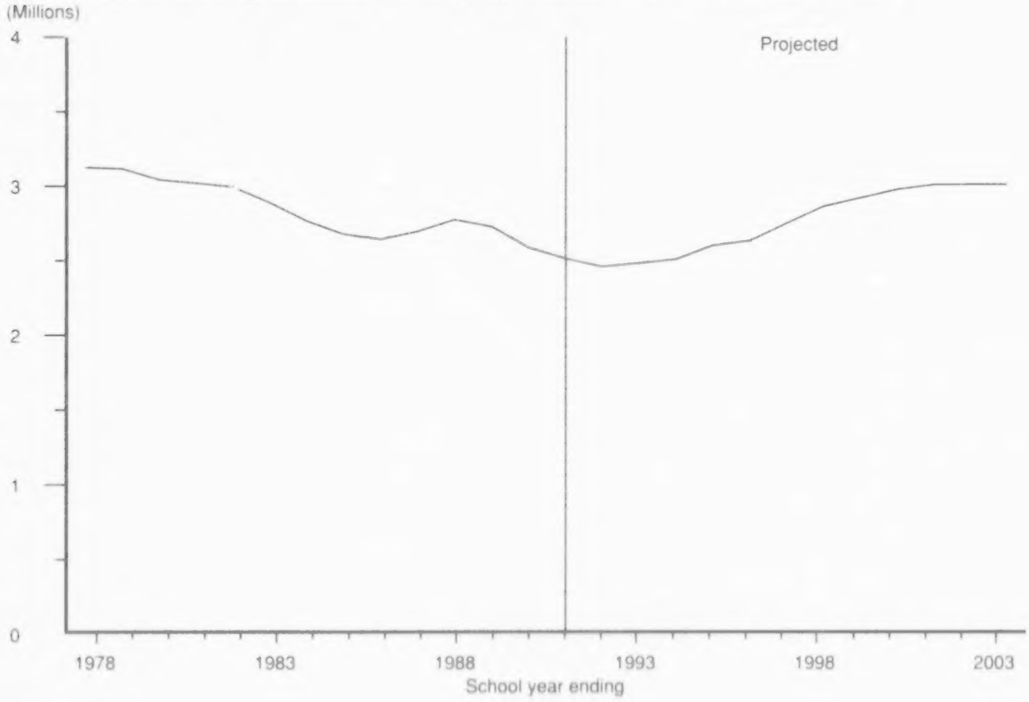

Figure 29

High school graduates, by control of institution, with projections: 1977-78 to 2002-2003

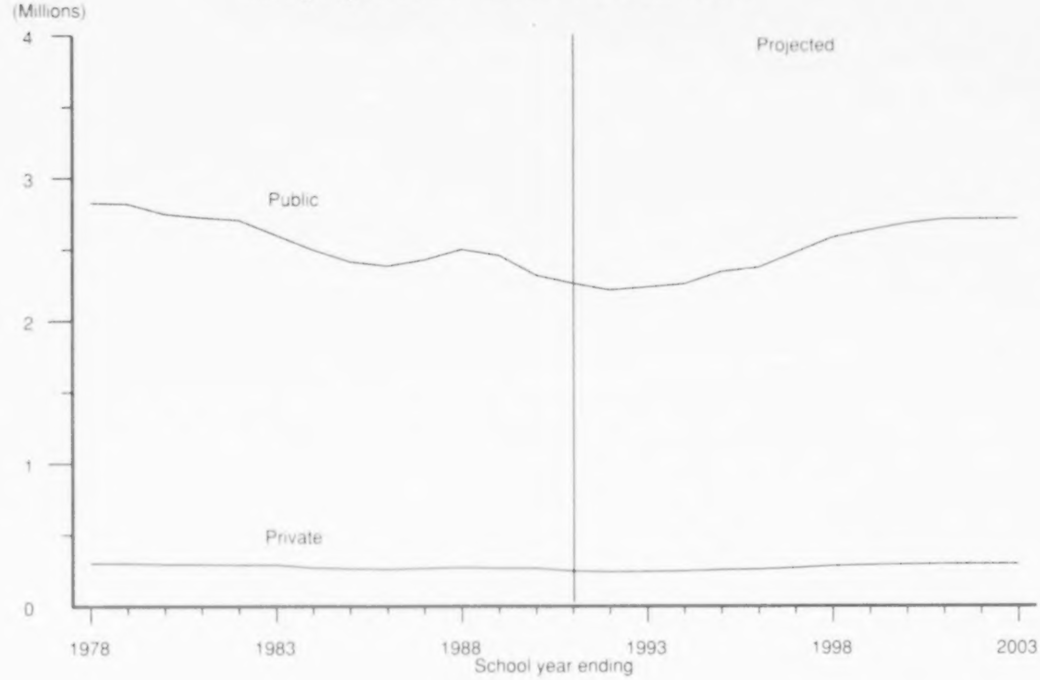

Figure 30

Average annual rates of change for high school graduates

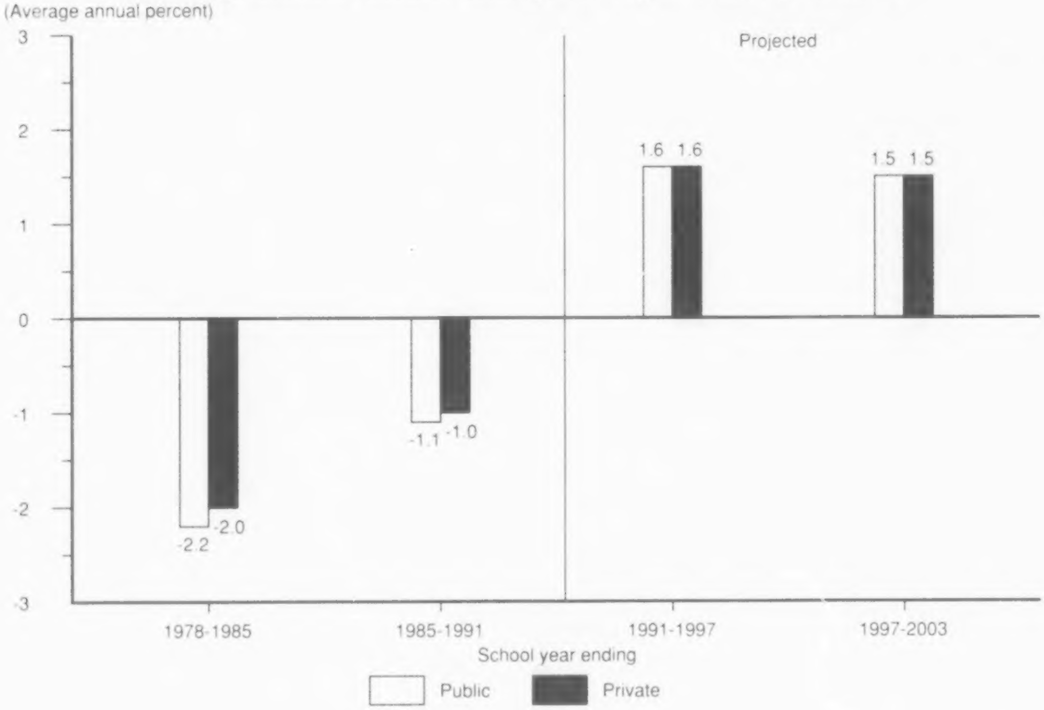

Table 26.—High school graduates, by control of institution, with projections: 50 States and D.C., 1977–78 to 2002–2003

(In thousands)

Year ending	Total	Public	Private
1978	3,127	2,825	302
1979	3,101	2,801	300
1980	3,043	2,748	295
1981	3,020	2,725	295
1982	2,995	2,705	290
1983	2,888	2,598	290
1984	2,767	2,495	272
1985	2,677	2,414	263
1986	2,643	2,383	260
1987	2,694	2,429	265
1988	2,773	2,500	273
1989	2,727	2,459	268
1990	2,586	2,320	266
1991 *	2,511	2,263	247
		Projected	
1992	2,457	2,215	242
1993	2,480	2,236	244
1994	2,506	2,259	247
1995	2,601	2,345	256
1996	2,631	2,372	259
1997	2,748	2,478	270
1998	2,863	2,581	282
1999	2,921	2,634	287
2000	2,978	2,685	293
2001	3,009	2,713	296
2002	3,010	2,714	296
2003	3,011	2,715	296

*Estimate

NOTE: Prior to 1990–91, numbers for private high school graduates were estimated by NCES. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," *NCES Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," *NCES Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Public Elementary and Secondary Education: School Year 1989–90," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1989–90," *Early Estimates*; "Key Statistics for Public and Private Elementary and Secondary Education: School Year 1990–91," *Early Estimates* and "Public and Private Elementary and Secondary Education Statistics: School Year 1991–92," *Early Estimates*. (This table was prepared June 1992.)

Chapter 4

Earned Degrees Conferred

The historical growth in enrollment of women in institutions of higher education led to an increase in the number of earned degrees conferred. Between 1977–78 and 1990–91, the number of degrees awarded to women rose at all levels. In contrast, degrees conferred on men declined at the associate, master's, and first-professional levels; those at the bachelor's and doctor's degree levels showed increases over 1977–78. In 1990–91, women earned the majority of associate, bachelor's, and master's degrees, and nearly two-fifths of doctor's and first-professional degrees. Over the projection period, the number of degrees awarded to women will continue to rise at all levels. With the exception of doctor's degrees, the number of degrees awarded to men will increase over the projection period.

Three alternative projections of earned degrees by level and sex were developed. The number of degrees was related to college-age populations and higher education enrollment by level enrolled and attendance status.

Associate Degrees

Between 1977–78 and 1979–80, the number of associate degrees decreased from 412,000 to 401,000 and then increased to 456,000 in 1982–83, before declining to 435,000 in 1987–88. Since then, it increased to about 470,000 in 1990–91 (table 27 and figure 31). Under the middle alternative, this number is expected to increase to 557,000 by 2002–2003, an increase of 19 percent. Under the low and high alternatives, the number of associate degrees is projected to range between 527,000 and 576,000 by 2002–2003. The number of associate degrees awarded to men decreased from 205,000 in 1977–78 to 184,000 in 1979–80. Thereafter, it rose to 207,000 in 1982–83 and then decreased to 186,000 in 1988–89, before rising to about 193,000 in 1990–91 (figure 32). Under the middle alternative, this number is projected to increase to 228,000 by 2002–2003, an increase of 18 percent. Under the low and high alternatives, the number of associate degrees awarded to men is expected to range between 214,000 and 237,000 by 2002–2003. The number of associate degrees awarded to women increased from 208,000 in 1977–78 to about 277,000 in 1990–91, an increase of 33 percent. Under the middle alternative, this number is projected to increase to 329,000 by 2002–2003, an increase of 19 percent. Under the low and high alternatives, the number of associate degrees awarded to women is projected to range between 313,000 and 339,000 by 2002–2003.

Bachelor's Degrees

The number of bachelor's degrees rose from 921,000 in 1977–78 to about 1,084,000 in 1990–91, an increase of 18 percent (table 28 and figure 33). Under the middle alternative, this number is expected to rise to 1,303,000 by 2002–2003, an increase of 20 percent. Under the low and high alternatives, the number of bachelor's degrees is projected to range between 1,224,000 and 1,351,000. The number of bachelor's degrees awarded to men declined from 487,000 in 1977–78 to 470,000 in 1980–81. Then, this number increased to 486,000 in 1985–86 and declined for two more years, before rising to about 498,000 in 1990–91 (figure 34). Under the middle alternative, this number is expected to increase to 607,000 by 2002–2003, an increase of 22 percent. Under the low and high alternatives, the number of bachelor's degrees awarded to men is projected to range between 559,000 and 629,000 by 2002–2003. The number of bachelor's degrees awarded to women increased from 434,000 in 1977–78 to about 586,000 in 1990–91, an increase of 35 percent. Under the middle alternative, this number is expected to increase to 696,000 by 2002–2003, an increase of 19 percent. Under the low and high alternatives, the number of bachelor's degrees awarded to women is projected to range between 665,000 and 722,000 by 2002–2003.

Master's Degrees

The number of master's degrees decreased from 312,000 in 1977–78 to 284,000 in 1983–84, before rising to about 337,000 in 1990–91, an increase of 19 percent from 1983–84 (table 29 and figure 35). Under the middle alternative, this number is expected to increase to 365,000 by 2002–2003, an increase of 8 percent. Under the low and high alternatives, the number of master's degrees is projected to range between 325,000 and 387,000 by 2002–2003. The number of master's degrees awarded to men decreased from 161,000 in 1977–78 to 141,000 in 1986–87. Then, it increased to about 157,000 in 1990–91 (figure 36). Under the middle alternative, this number is projected to increase to 179,000 in 2002–2003, an increase of 14 percent. Under the low and high alternatives, the number of master's degrees awarded to men is projected to range between 149,000 and 191,000 by 2002–2003. The number of master's degrees awarded to women decreased from 150,000 in 1977–78 to 141,000 in 1983–84. Since then, it increased to about 180,000 in 1990–91. Under the middle alternative, this number is expected to increase to 186,000 by 2002–2003, an increase of 3 percent. Under the low and high alternatives, the number of master's degrees awarded to women is projected to range between 176,000 and 196,000 by 2002–2003.

Doctor's Degrees

The number of doctor's degrees increased from 32,100 in 1977–78 to about 40,000 in 1990–91, an increase of 24 percent (table 30 and figure 37). Under the middle alternative, this number is expected to increase to 41,800, an increase of 4 percent. Under the low and high alternatives, the number of doctor's degrees is projected to range between 37,100 and 43,700 by 2002–2003. The number of doctor's degrees awarded to men decreased from 23,700 in 1977–78 to 21,700 in 1984–85. Since then, it increased to about 25,000 in 1990–91. Under the middle alternative, this number is expected to fall to 21,700 by 2002–2003, a decrease of 13 percent (figure 38). Under the low and high alternatives, the number of doctor's degrees awarded to men is projected to range between 17,100 and 23,400 by 2002–2003. The number of degrees awarded to women rose from 8,500 in 1977–78 to about 15,000 in 1990–91, an increase of 77 percent. Over the projection period, this pattern is expected to continue. Under the middle alternative, the number of doctor's degrees awarded to women is projected to climb to 20,100 by 2002–2003, an increase of 34 percent. Under the low and high alternatives, the number of doctor's degrees awarded to women is projected to range between 20,000 and 20,300 by 2002–2003. The share of doctor's degrees awarded to women, which was 26 percent in 1977–78 and 38 percent in 1990–91, is projected to climb to 48 percent by 2002–2003.

First-Professional Degrees

The number of first-professional degrees awarded rose from 66,600 in 1977–78 to 75,100 in 1984–85. Since then, it decreased to 70,700 in 1987–88, followed by an increase to about 73,000 in 1990–91 (table 31 and figure 39). Under the middle alternative, this number is expected to be 88,000 by 2002–2003, an increase of 21 percent. Under the low and high alternatives, the number of first-professional degrees is projected to range between 79,900 and 92,600 by 2002–2003. The number of first-professional degrees awarded to men decreased from 52,300 in 1977–78 to about 45,000 in 1990–91, a decrease of 14 percent (figure 40). Under the middle alternative, this number is projected to increase to 52,200 by 2002–2003, an increase of 16 percent. Under the low and high alternatives, the number of first-professional degrees awarded to men is projected to range between 46,700 and 54,900 by 2002–2003. The number of first-professional degrees awarded to women increased from 14,300 in 1977–78 to about 28,000 in 1990–91, an increase of 96 percent. Under the middle alternative, this number is expected to increase to 35,800 by 2002–2003, an increase of 28 percent. Under the low and high alternatives, the number of first-professional degrees awarded to women is projected to range between 33,200 and 37,700 by 2002–2003. The women's proportion of first-professional degrees rose from 21 percent in 1977–78 to 38 percent in 1990–91. By 2002–2003, this proportion is expected to be 41 percent.

Figure 31
Associate degrees, with alternative projections: 1977-78 to 2002-2003

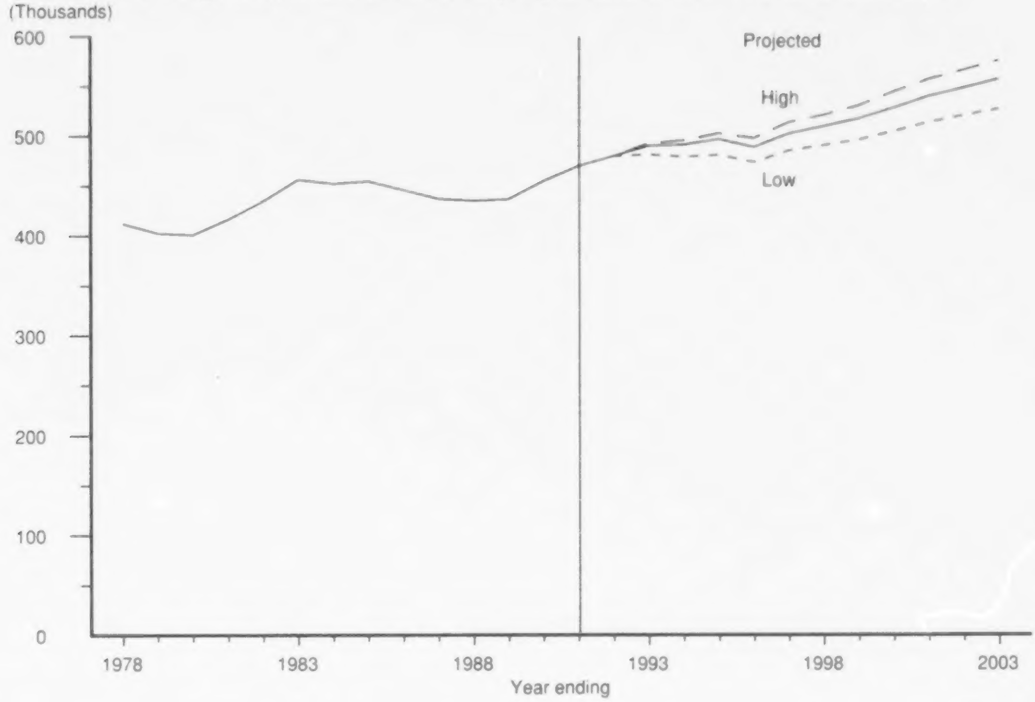

Figure 32
Associate degrees, by sex of recipient, with middle alternative projections: 1977-78 to 2002-2003

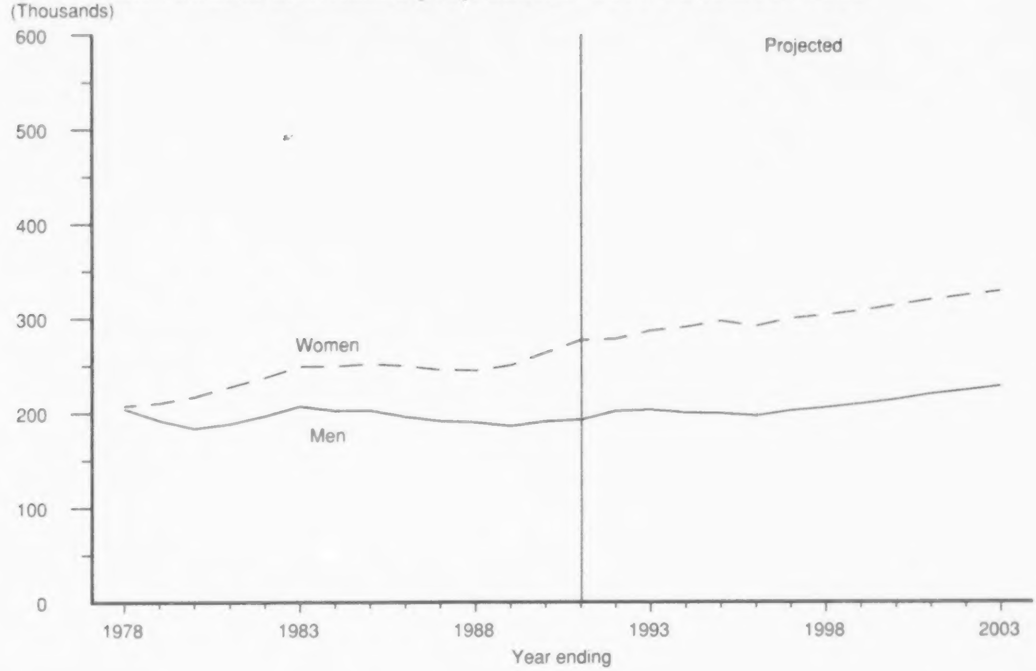

Figure 33
Bachelor's degrees, with alternative projections: 1977-78 to 2002-2003

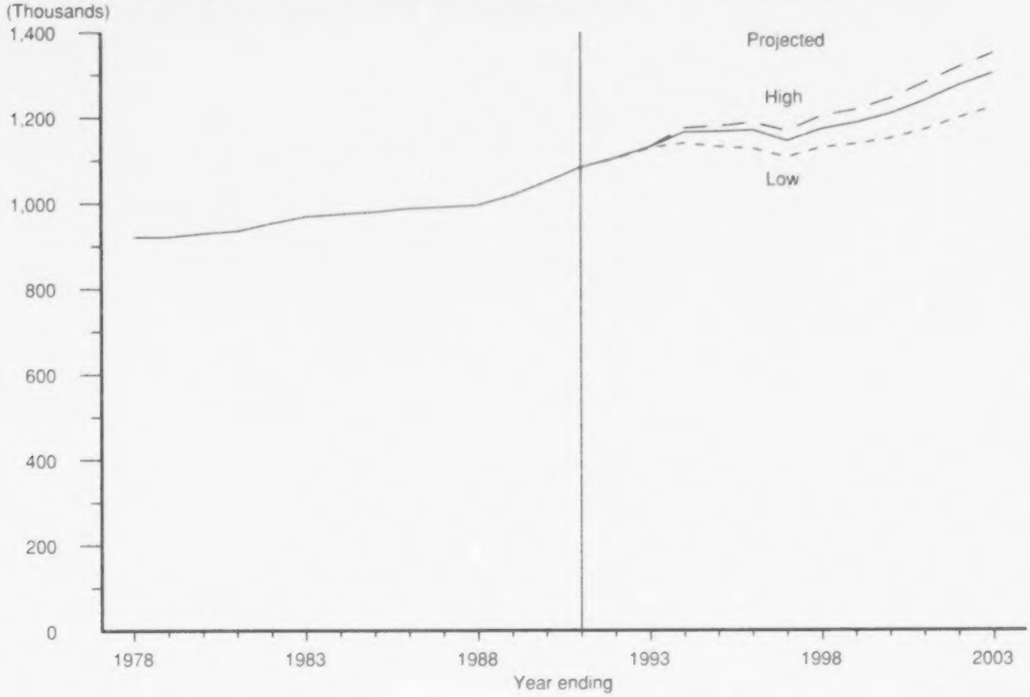

Figure 34
Bachelor's degrees, by sex of recipient, with middle alternative projections: 1977-78 to 2002-2003

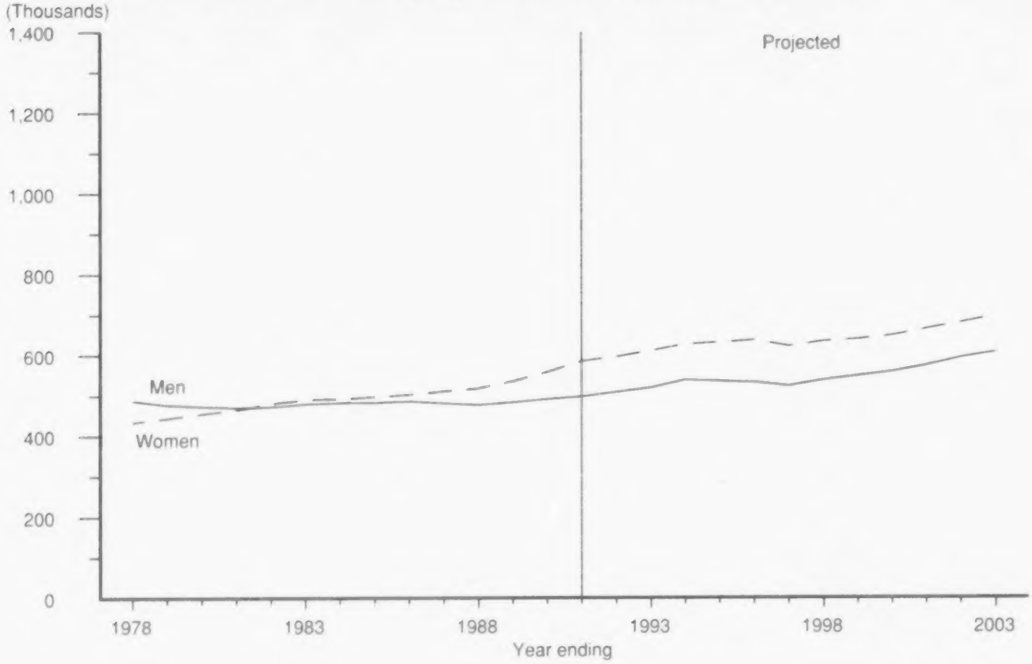

Figure 35
Master's degrees, with alternative projections: 1977-78 to 2002-2003

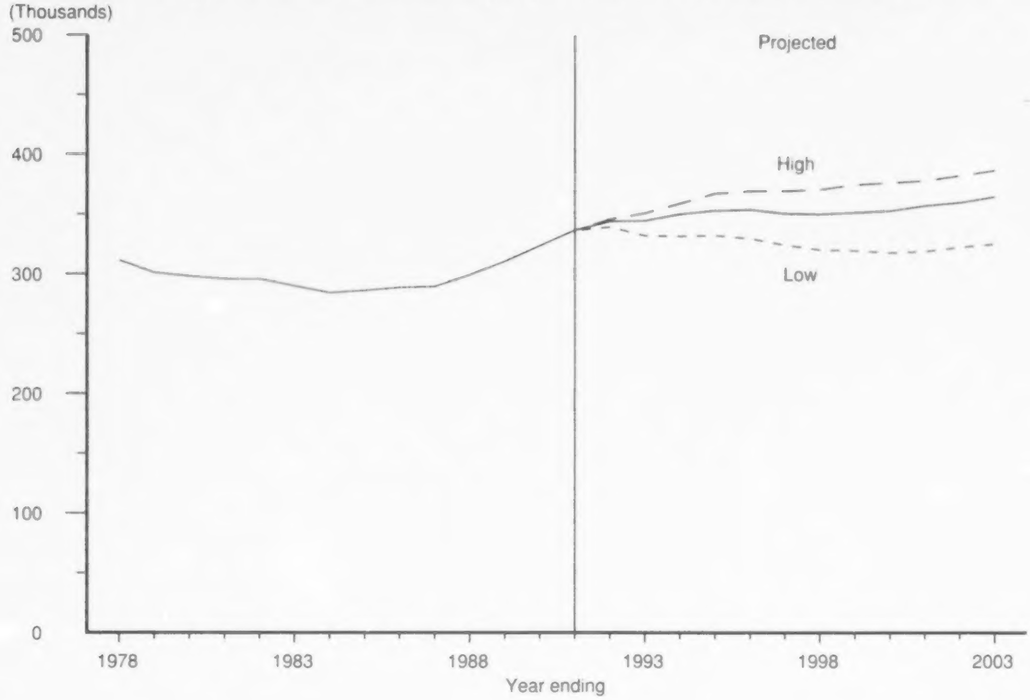

Figure 36
Master's degrees, by sex of recipient, with middle alternative projections: 1977-78 to 2002-2003

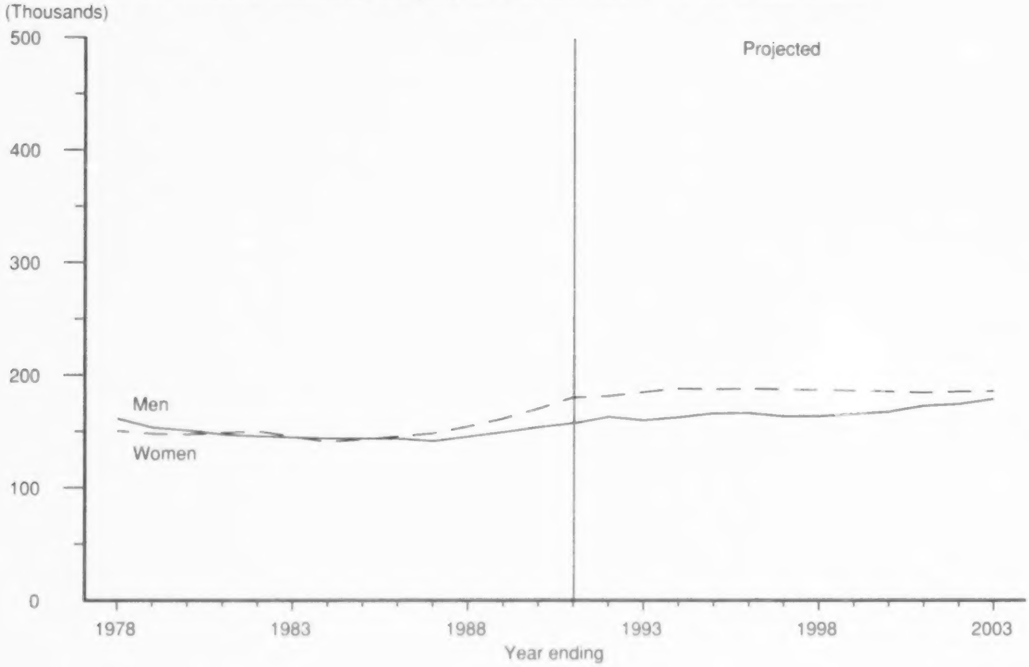

Figure 37

Doctor's degrees, with alternative projections: 1977-78 to 2002-2003

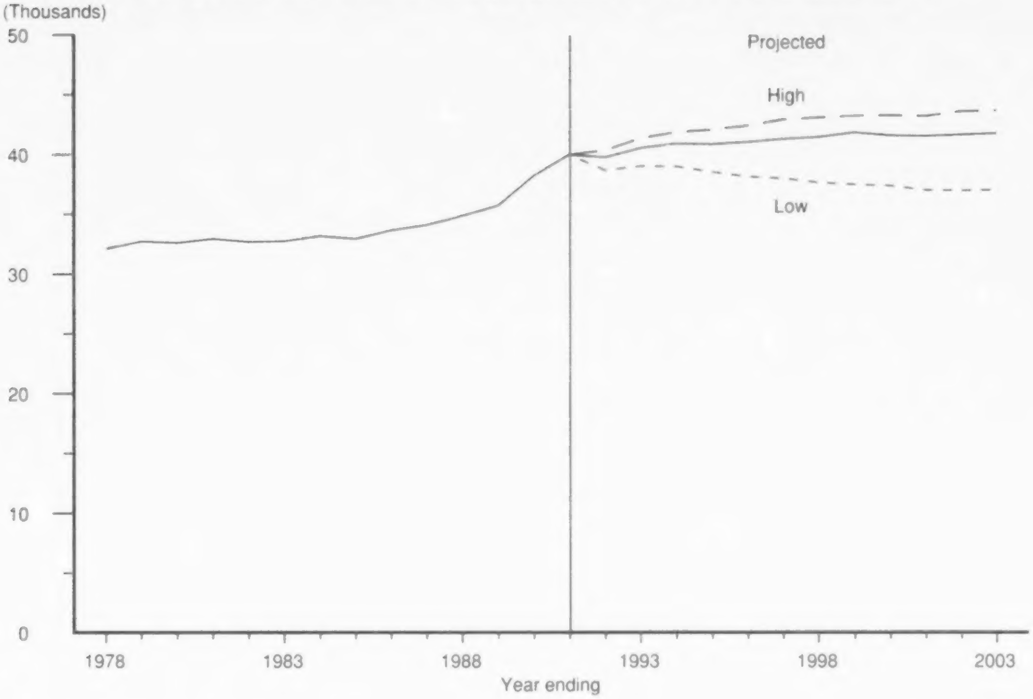

Figure 38

Doctor's degrees, by sex of recipient, with middle alternative projections: 1977-78 to 2002-2003

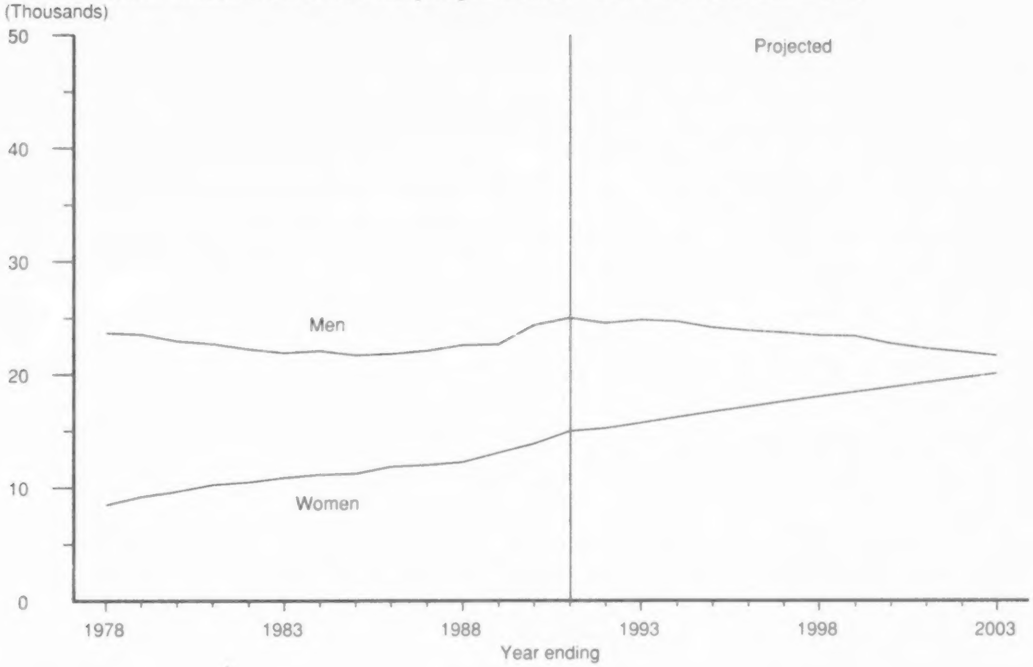

Figure 39

First-professional degrees, with alternative projections: 1977-78 to 2002-2003

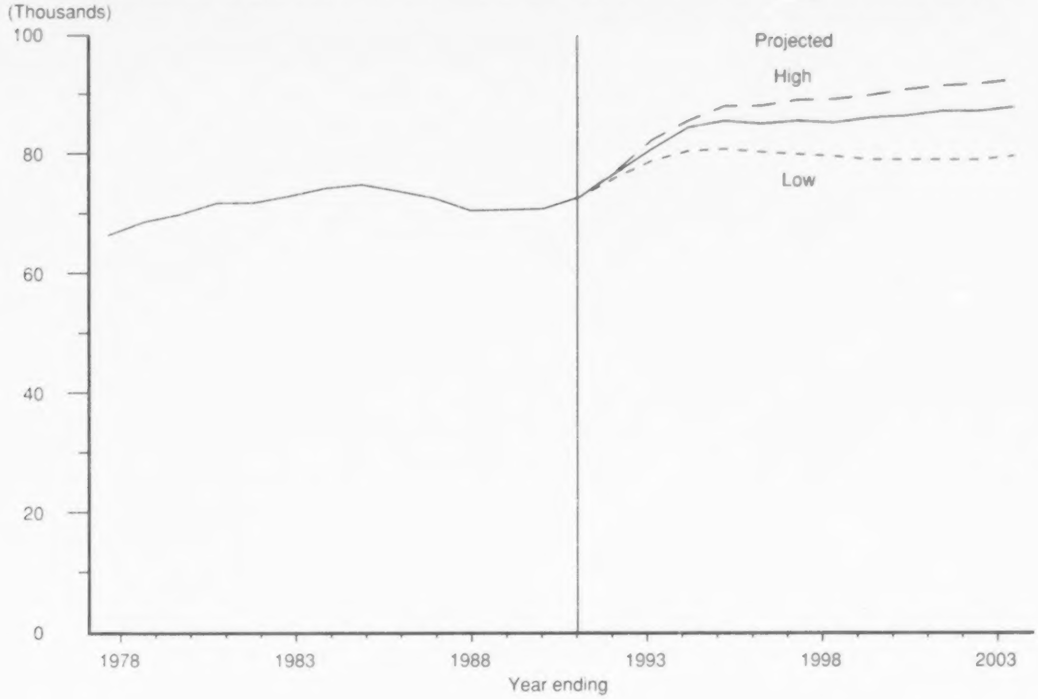

Figure 40

First-professional degrees, by sex of recipient, with middle alternative projections: 1977-78 to 2002-2003

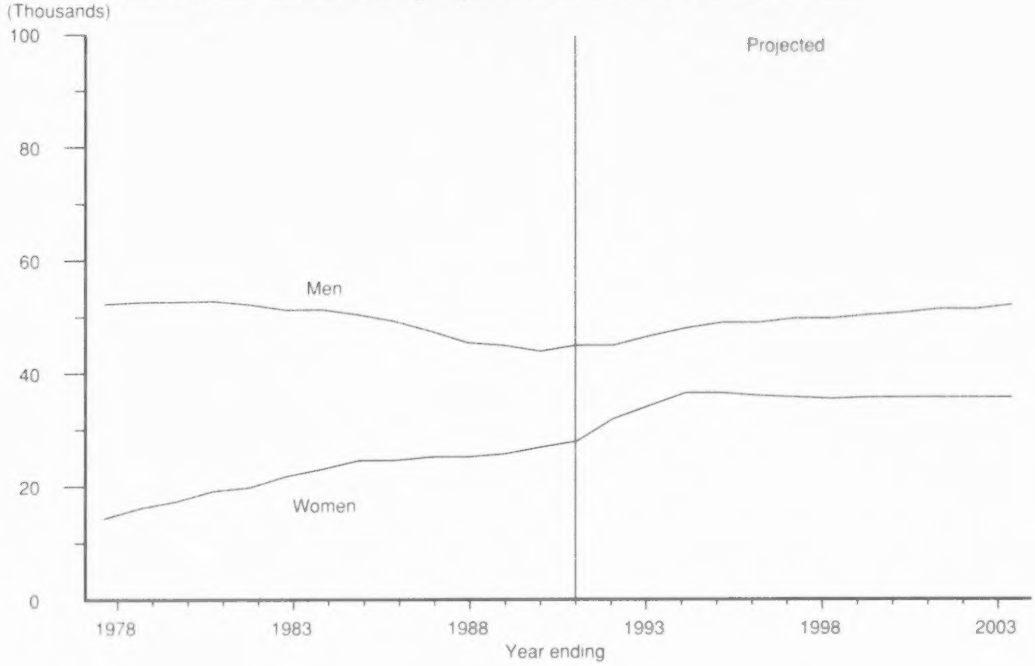

Table 27.—Associate degrees, by sex of recipient, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Total	Men	Women
1978	412,246	204,718	207,528
1979	402,702	192,091	210,611
1980	400,910	183,737	217,173
1981	416,377	188,638	227,739
1982	434,515	196,939	237,576
1983	456,441	207,141	249,300
1984	452,416	202,762	249,654
1985	454,712	202,932	251,780
1986	446,047	196,166	249,881
1987	437,137	191,525	245,612
1988	435,085	190,047	245,038
1989	436,764	186,316	250,448
1990	454,679	191,072	263,607
1991 *	470,000	193,000	277,000
		Middle alternative projections	
1992	480,000	202,000	278,000
1993	490,000	203,000	287,000
1994	492,000	201,000	291,000
1995	497,000	200,000	297,000
1996	489,000	197,000	292,000
1997	502,000	202,000	300,000
1998	510,000	206,000	304,000
1999	517,000	209,000	308,000
2000	528,000	214,000	314,000
2001	540,000	220,000	320,000
2002	548,000	224,000	324,000
2003	557,000	228,000	329,000
		Low alternative projections	
1992	480,000	202,000	278,000
1993	481,000	201,000	280,000
1994	479,000	197,000	282,000
1995	481,000	195,000	286,000
1996	474,000	192,000	282,000
1997	485,000	195,000	290,000
1998	491,000	198,000	293,000
1999	496,000	200,000	296,000
2000	505,000	204,000	301,000
2001	514,000	208,000	306,000
2002	521,000	211,000	310,000
2003	527,000	214,000	313,000
		High alternative projections	
1992	480,000	202,000	278,000
1993	492,000	204,000	288,000
1994	496,000	203,000	293,000
1995	503,000	203,000	300,000
1996	498,000	200,000	298,000
1997	513,000	207,000	306,000
1998	521,000	211,000	310,000
1999	530,000	215,000	315,000
2000	544,000	222,000	322,000
2001	556,000	227,000	329,000
2002	566,000	232,000	334,000
2003	576,000	237,000	339,000

* Estimate.

NOTE: Projections are based on data through 1990-91. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey; Integrated Postsecondary Education Data System (IPEDS), "Completions" survey; and "National Higher Education Statistics: Fall 1991," *Early Estimates*. (This table was prepared June 1992.)

Table 28.—Bachelor's degrees, by sex of recipient, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Total	Men	Women
1978	921,204	487,347	433,857
1979	921,390	477,344	444,046
1980	929,417	473,611	455,806
1981	935,140	469,883	465,257
1982	952,998	473,364	479,634
1983	969,510	479,140	490,370
1984	974,309	482,319	491,990
1985	979,477	482,528	496,949
1986	987,823	485,923	501,900
1987	991,339	480,854	510,485
1988	994,829	477,203	517,626
1989	1,018,755	483,346	535,409
1990	1,049,657	491,488	558,169
1991 *	1,084,000	498,000	586,000
		Middle alternative projections	
1992	1,105,000	509,000	596,000
1993	1,131,000	520,000	611,000
1994	1,166,000	539,000	627,000
1995	1,166,000	535,000	631,000
1996	1,170,000	532,000	638,000
1997	1,146,000	524,000	622,000
1998	1,173,000	538,000	635,000
1999	1,186,000	547,000	639,000
2000	1,208,000	559,000	649,000
2001	1,239,000	574,000	665,000
2002	1,275,000	594,000	681,000
2003	1,303,000	607,000	696,000
		Low alternative projections	
1992	1,103,000	507,000	596,000
1993	1,129,000	518,000	611,000
1994	1,140,000	527,000	613,000
1995	1,132,000	519,000	613,000
1996	1,128,000	512,000	616,000
1997	1,106,000	500,000	606,000
1998	1,130,000	510,000	620,000
1999	1,138,000	515,000	623,000
2000	1,151,000	522,000	629,000
2001	1,171,000	532,000	639,000
2002	1,199,000	547,000	652,000
2003	1,224,000	559,000	665,000
		High alternative projections	
1992	1,105,000	509,000	596,000
1993	1,132,000	521,000	611,000
1994	1,175,000	543,000	632,000
1995	1,180,000	541,000	639,000
1996	1,188,000	542,000	646,000
1997	1,168,000	533,000	635,000
1998	1,204,000	554,000	650,000
1999	1,218,000	562,000	656,000
2000	1,243,000	577,000	666,000
2001	1,280,000	595,000	685,000
2002	1,318,000	613,000	705,000
2003	1,351,000	629,000	722,000

* Estimate.

NOTE: Projections are based on data through 1990–91. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey; Integrated Postsecondary Education Data System (IPEDS), "Completions" survey; and "National Higher Education Statistics: Fall 1991," *Early Estimates*. (This table was prepared June 1992.)

Table 29.—Master's degrees, by sex of recipient, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Total	Men	Women
1978	311,620	161,212	150,408
1979	301,079	153,370	147,709
1980	298,081	150,749	147,332
1981	295,739	147,043	148,696
1982	295,546	145,532	150,014
1983	289,921	144,697	145,224
1984	284,263	143,595	140,668
1985	286,251	143,390	142,861
1986	288,567	143,508	145,059
1987	289,557	141,363	148,194
1988	299,317	145,163	154,154
1989	310,621	149,354	161,267
1990	323,844	153,643	170,201
1991 *	337,000	157,000	180,000
		Middle alternative projections	
1992	344,000	163,000	181,000
1993	345,000	160,000	185,000
1994	350,000	162,000	188,000
1995	354,000	166,000	188,000
1996	354,000	166,000	188,000
1997	350,000	163,000	187,000
1998	350,000	163,000	187,000
1999	351,000	165,000	186,000
2000	353,000	167,000	186,000
2001	358,000	173,000	185,000
2002	361,000	175,000	186,000
2003	365,000	179,000	186,000
		Low alternative projections	
1992	339,000	163,000	176,000
1993	332,000	153,000	179,000
1994	332,000	153,000	179,000
1995	333,000	154,000	179,000
1996	330,000	152,000	178,000
1997	324,000	146,000	178,000
1998	321,000	143,000	178,000
1999	320,000	142,000	178,000
2000	318,000	141,000	177,000
2001	319,000	143,000	176,000
2002	323,000	147,000	176,000
2003	325,000	149,000	176,000
		High alternative projections	
1992	346,000	163,000	183,000
1993	351,000	163,000	188,000
1994	359,000	168,000	191,000
1995	367,000	173,000	194,000
1996	369,000	174,000	195,000
1997	370,000	174,000	196,000
1998	371,000	175,000	196,000
1999	375,000	178,000	197,000
2000	376,000	180,000	196,000
2001	378,000	183,000	195,000
2002	383,000	187,000	196,000
2003	387,000	191,000	196,000

* Estimate.

NOTE: Projections are based on data through 1990–91. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey; Integrated Postsecondary Education Data System (IPEDS), "Completions" survey; and "National Higher Education Statistics: Fall 1991," *Early Estimates*. (This table was prepared June 1992.)

Table 30.—Doctor's degrees, by sex of recipient, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Total	Men	Women
1978	32,131	23,658	8,473
1979	32,730	23,541	9,189
1980	32,615	22,943	9,672
1981	32,958	22,711	10,247
1982	32,707	22,224	10,483
1983	32,775	21,902	10,873
1984	33,209	22,064	11,145
1985	32,943	21,700	11,243
1986	33,653	21,819	11,834
1987	34,120	22,099	12,021
1988	34,870	22,615	12,255
1989	35,720	22,648	13,072
1990	38,238	24,371	13,867
1991 [*]	40,000	25,000	15,000
		Middle alternative projections	
1992	39,800	24,500	15,300
1993	40,500	24,800	15,700
1994	40,900	24,700	16,200
1995	40,900	24,200	16,700
1996	41,100	23,900	17,200
1997	41,300	23,700	17,600
1998	41,400	23,400	18,000
1999	41,900	23,400	18,500
2000	41,600	22,700	18,900
2001	41,600	22,300	19,300
2002	41,700	22,000	19,700
2003	41,800	21,700	20,100
		Low alternative projections	
1992	38,700	23,500	15,200
1993	39,100	23,400	15,700
1994	39,000	22,900	16,100
1995	38,600	22,000	16,600
1996	38,200	21,200	17,000
1997	38,000	20,600	17,400
1998	37,700	19,800	17,900
1999	37,500	19,200	18,300
2000	37,400	18,700	18,700
2001	37,000	17,900	19,100
2002	37,000	17,400	19,600
2003	37,100	17,100	20,000
		High alternative projections	
1992	40,400	25,100	15,300
1993	41,400	25,600	15,800
1994	41,900	25,600	16,300
1995	42,100	25,300	16,800
1996	42,500	25,200	17,300
1997	42,900	25,200	17,700
1998	43,200	25,000	18,200
1999	43,200	24,600	18,600
2000	43,300	24,300	19,000
2001	43,200	23,800	19,400
2002	43,600	23,800	19,800
2003	43,700	23,400	20,300

[*] Estimate.

NOTE: Projections are based on data through 1990–91. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey; Integrated Postsecondary Education Data System (IPEDS), "Completions" survey; and "National Higher Education Statistics: Fall 1991," *Early Estimates*. (This table was prepared June 1992.)

Table 31.—First-professional degrees, by sex of recipient, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Total	Men	Women
1978	66,581	52,270	14,311
1979	68,848	52,652	16,196
1980	70,131	52,716	17,415
1981	71,956	52,792	19,164
1982	72,032	52,223	19,809
1983	73,136	51,310	21,826
1984	74,407	51,334	23,073
1985	75,063	50,455	24,608
1986	73,910	49,261	24,649
1987	72,750	47,460	25,290
1988	70,735	45,484	25,251
1989	70,856	45,046	25,810
1990	70,980	44,002	26,978
1991 *	73,000	45,000	28,000
		Middle alternative projections	
1992	77,000	45,000	32,000
1993	81,000	46,700	34,300
1994	84,600	48,000	36,600
1995	85,700	49,100	36,600
1996	85,200	49,100	36,100
1997	85,700	49,800	35,900
1998	85,400	49,800	35,600
1999	86,200	50,400	35,800
2000	86,600	50,800	35,800
2001	87,300	51,500	35,800
2002	87,300	51,500	35,800
2003	88,000	52,200	35,800
		Low alternative projections	
1992	76,200	45,000	31,200
1993	79,000	46,000	33,000
1994	80,600	46,300	34,300
1995	81,000	46,700	34,300
1996	80,500	46,700	33,800
1997	80,100	46,300	33,800
1998	79,800	46,000	33,800
1999	79,200	46,000	33,200
2000	79,200	46,000	33,200
2001	79,200	46,000	33,200
2002	79,200	46,000	33,200
2003	79,900	46,700	33,200
		High alternative projections	
1992	77,200	45,000	32,200
1993	82,500	47,700	34,800
1994	85,700	49,100	36,600
1995	88,100	50,400	37,700
1996	88,200	50,800	37,400
1997	89,200	51,500	37,700
1998	89,300	52,200	37,100
1999	90,000	52,900	37,100
2000	90,900	53,200	37,700
2001	91,600	53,900	37,700
2002	91,900	54,200	37,700
2003	92,600	54,900	37,700

* Estimate.

NOTE: Projections are based on data through 1990–91. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey; Integrated Postsecondary Education Data System (IPEDS), "Completions" survey; and "National Higher Education Statistics: Fall 1991," *Early Estimates*. (This table was prepared June 1992.)

Chapter 5

Classroom Teachers

Between 1991 and 2003, the number of classroom teachers in elementary and secondary schools is projected to rise, primarily due to the increase in school enrollment during this period. Increases are expected in the numbers of both elementary and secondary teachers, although the number of secondary teachers will increase at a faster rate than the number of elementary teachers. The numbers of public and private teachers will grow at similar rates.

Three alternative projections of the numbers of classroom teachers were developed to indicate a range of possible outcomes. These alternatives are based on different assumptions about the growth paths for two of the key variables in the teacher model—disposable personal income per capita and education revenue receipts from state sources per capita. Under the middle alternative, disposable personal income per capita is projected to increase by 17 percent between 1991 and 2003, while education revenue receipts from state sources per capita will rise by 30 percent during this period. The low alternative assumes that disposable personal income per capita and education revenue receipts from state sources per capita will increase by 16 percent and 8 percent, respectively. The high alternative assumes that disposable personal income per capita and education revenue receipts from state sources per capita will increase by 19 percent and 46 percent, respectively. The third variable in the teacher model, enrollment by organizational level, is the same for all three alternatives.

For classroom teachers, the following tabulations show: (1) the average annual rate of change (in percent) for 1978–91 and the three alternative projected rates of change for 1991–2003; and (2) the rates of change for 1978–85 and 1985–91 and the middle alternative projected rates of change for 1991–97 and 1997–2003.

Average annual rate of change (in percent)

	1978–91	1991–2003		
		Low	Middle	High
Total	0.9	1.3	1.5	1.8
Elementary	1.7	0.9	1.2	1.4
Secondary	-0.2	1.8	2.0	2.2
Public	0.7	1.3	1.6	1.8
Private	2.1	1.2	1.5	1.7

Average annual rate of change (in percent)

(Middle alternative projections)

	1978–85	1985–91	Projected	
			1991–97	1997–2003
Total	0.4	1.5	1.8	1.3
Elementary	1.1	2.4	1.4	1.1
Secondary	-0.5	0.2	2.6	1.5
Public	-0.0	1.6	1.9	1.3
Private	3.4	0.6	1.7	1.2

Elementary and Secondary School Teachers

The number of classroom teachers in elementary and secondary schools decreased from 2.48 million in 1978 to 2.44 million in 1981, a decrease of 2 percent (table 32 and figure 41). Thereafter, this number increased steadily to about 2.79 million in 1991, an increase of 14 percent. Under the middle alternative, the number of classroom teachers is projected to increase to 3.35 million by the year 2003, increasing at an annual rate of 1.5 percent, for a 20-percent increase over the projection period. The growth rate will be higher in the first half of the projection period (1991–97) than in the second half (1997–2003), 1.8 percent per year versus 1.3 percent (figure 42). Under the low and high alternatives, the number of classroom teachers is projected to range between 3.25 million and 3.44 million by the year 2003. For the low alternative, this will be an average annual growth rate of 1.3 percent. For the high alternative, this will be a growth rate of 1.8 percent.

Classroom Teachers, by Organizational Level

While elementary enrollment decreased from 1978 to 1983, the number of elementary teachers rose slightly, from 1.38 million in 1978 to 1.43 million in 1983 (figure 43). Then, the number continued to increase to about 1.70 million in 1991, an increase of 24 percent from 1978. Under the middle alternative, the number of elementary teachers is projected to increase to 1.97 million by 2003, an increase of 16 percent from 1991; this increase represents an average annual growth rate of 1.2 percent. During the projection period, the growth rate in the 1991–97 period will be 1.4 percent, while the growth rate in the 1997–2003 period will be 1.1 percent (figure 44). Under the low and high alternatives, elementary teachers are projected to range between 1.90 million and 2.03 million by the year 2003. For the low alternative, this will be an average annual growth rate of 0.9 percent. For the high alternative, this will be a growth rate of 1.4 percent.

The number of secondary classroom teachers decreased from 1.10 million in 1978 to 1.04 million in 1981. Then, the number of secondary classroom teachers increased to about 1.08 million in 1991, an increase of 4 percent from 1981. However, secondary enrollment decreased by 11 percent between 1981 and 1991. Under the middle alternative, the number of secondary teachers is projected to increase from 1.08 million in 1991 to 1.38 million by the year 2003, resulting in an increase of 28 percent. This increase will represent an average annual growth rate of 2.0 percent over the projection period. During the projection period, the growth rate in the 1991–97 period will be 2.6 percent, while the growth rate in the 1997–2003 period will be 1.5 percent. Under the low and high alternatives, secondary teachers are projected to range between 1.35 million and 1.41 million by the year 2003. For the low alternative, this will be an average annual growth rate of 1.8 percent. For the high alternative, this will be a growth rate of 2.2 percent.

Classroom Teachers, by Control of School

The number of classroom teachers in public elementary and secondary schools decreased from 2.21 million in 1978 to 2.13 million in 1981. Then, the number of public school teachers increased to about 2.43 million in 1991, an increase of 14 percent from 1981 (figure 45). Under the middle alternative, the number of public school teachers is projected to increase to 2.93 million by the year 2003, resulting in an increase of 20 percent from 1991. This increase will represent an average annual growth rate of 1.6 percent. During the projection period, the growth rate in the 1991–97 period will be 1.9 percent, while the growth rate in the 1997–2003 period will be 1.3 percent (figure 46). Under the low and high alternatives, public school teachers are projected to range between 2.84 million and 3.00 million by the year 2003. For the low alternative, this will be an average annual growth rate of 1.2 percent. For the high alternative, this will be a growth rate of 1.7 percent.

The number of classroom teachers in private elementary and secondary schools was about 355,000 in 1991. This number is projected to increase to 422,000 by the year 2003, an increase of 19 percent from 1991. This increase will represent an average annual growth rate of 1.5 percent. During the projection period, the growth rate in the 1991–97 period will be 1.7 percent, while the growth rate in the 1997–2003 period will be 1.2 percent. Under the low and high alternatives, private school teachers are projected to range between 409,000 and 434,000 by the year 2003. For the low alternative, this will be an average annual growth rate of 1.2 percent. For the high alternative, this will be a growth rate of 1.7 percent.

Pupil-Teacher Ratios

A broad relationship between pupils and teachers can be described by the pupil-teacher ratio. The pupil-teacher ratios were computed based on elementary and secondary enrollment by organizational level and the number of classroom teachers by organizational level.

The pupil-teacher ratio in elementary schools decreased from 20.9 in 1978 to 18.4 in 1989 (table 33 and figure 47). Then, the pupil-teacher ratio increased to about 18.5 in 1991. Under the middle alternative, this ratio is projected to continue to increase to 19.0 in 1992, before declining to 17.7 by the year 2003. Under the low and high alternatives, the pupil-teacher ratio in elementary schools is expected to range between 17.2 and 18.3 by the year 2003.

For public elementary schools, under the middle alternative, the pupil-teacher ratio is projected to increase from 18.9 in 1991 to 19.5 in 1992 and then decline to 18.1 by the year 2003 (figure 48). Under the low and high alternatives, the pupil-teacher ratio in public elementary schools is projected to range between 17.6 and 18.7 by the year 2003. For private elementary schools, under the middle alternative, the pupil-teacher ratio is projected to increase from 16.0 in 1991 to 16.6 in 1992 and then decline to 15.5 by the year 2003. Under the low and high alternatives, the pupil-teacher ratio in private elementary schools is expected to range between 15.1 and 16.1 by the year 2003.

For secondary schools, the pupil-teacher ratio decreased from 17.1 in 1978 to 14.3 in 1990. Then, it increased to about 14.4 in 1991. Under the middle alternative, this ratio is projected to fall slightly to 14.1 by the year 2003. Under the low and high alternatives, the pupil teacher ratio in secondary schools is projected to range between 13.8 and 14.4 by the year 2003.

For public secondary schools, under the middle alternative, the pupil-teacher ratio is projected to decrease from 14.7 in 1991 to 14.6 in 1992 and then increase to 14.7 and remain there through 1997, before falling to 14.4 by the year 2003. Under the low and high alternatives, the pupil-teacher ratio in public secondary schools is expected to range between 14.1 and 14.7 by the year 2003. For private secondary schools, under the middle alternative, the pupil-teacher ratio is projected to decline from 11.1 in 1991 to 11.0 in 1993 and then increase to 11.2 in 1998, before falling to 10.9 by the year 2003. Under the low and high alternatives, the pupil-teacher ratio in private secondary schools is projected to range between 10.6 and 11.1 by the year 2003.

Although private school classroom teachers represented 13 percent of total classroom teachers in 1991, private school enrollment was 11 percent of total enrollment. This indicates that private schools have more teachers for a given number of students than do public schools; that is, private school pupil-teacher ratios are smaller than public school pupil-teacher ratios.

Figure 41

Elementary and secondary classroom teachers, with alternative projections: Fall 1978 to fall 2003

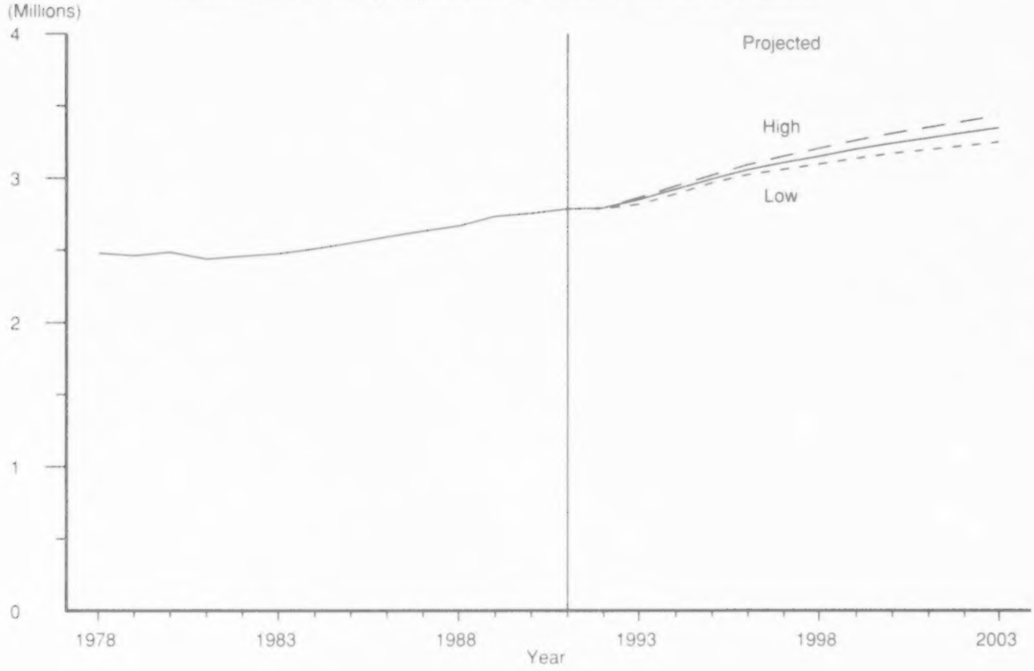

Figure 42

Average annual growth rates for classroom teachers

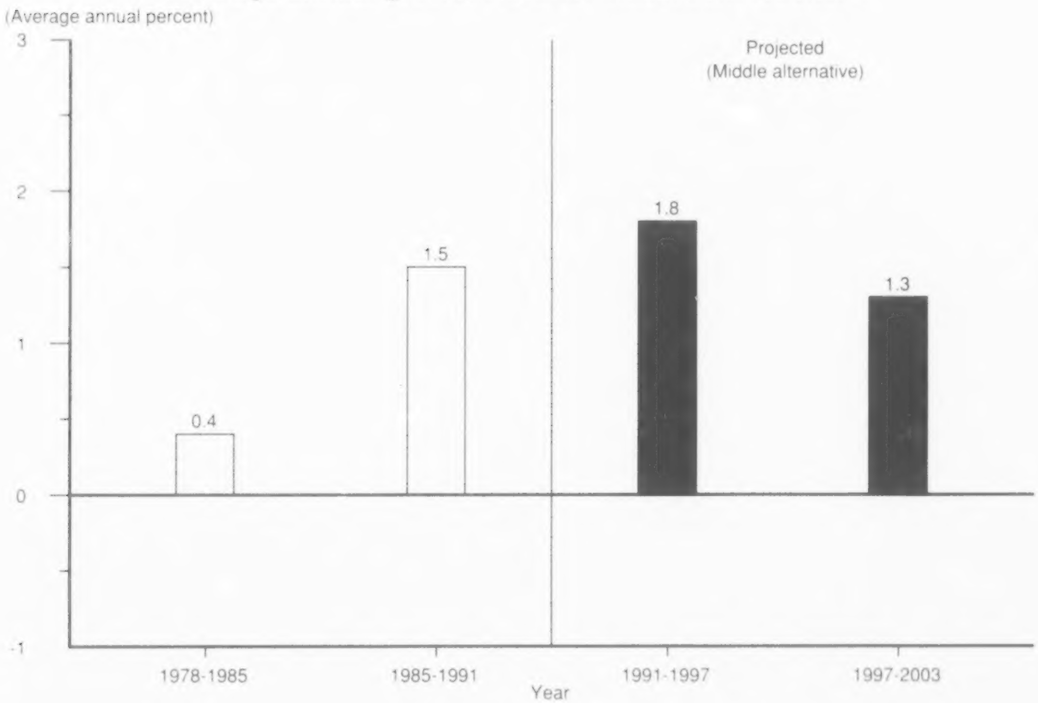

Figure 43

Elementary and secondary classroom teachers, by organizational level, with middle alternative projections: Fall 1978 to fall 2003

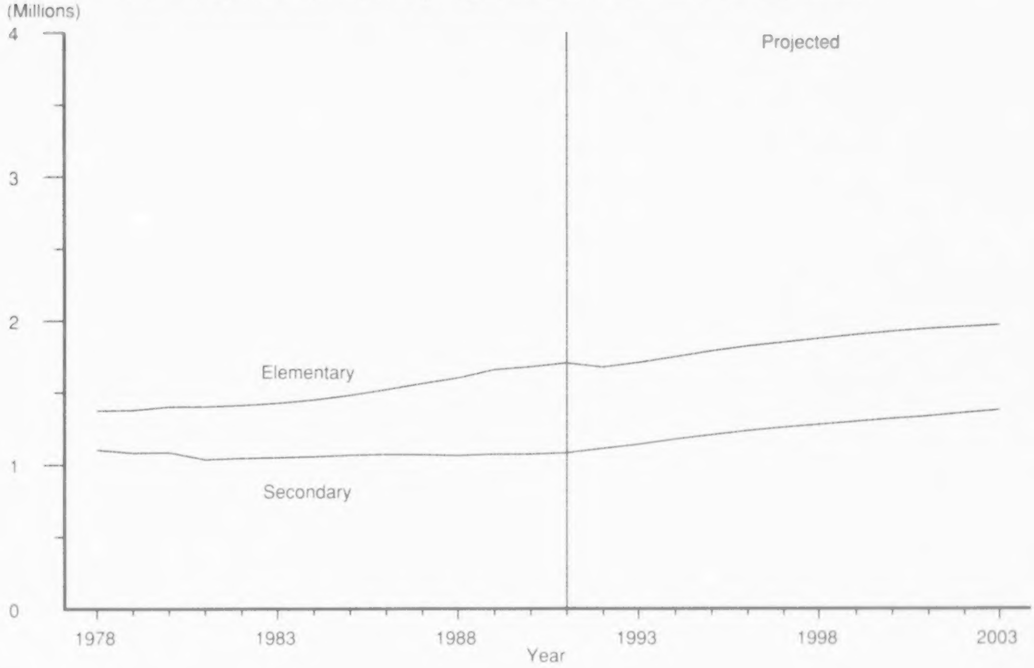

Figure 44

Average annual rates of change for classroom teachers, by organizational level

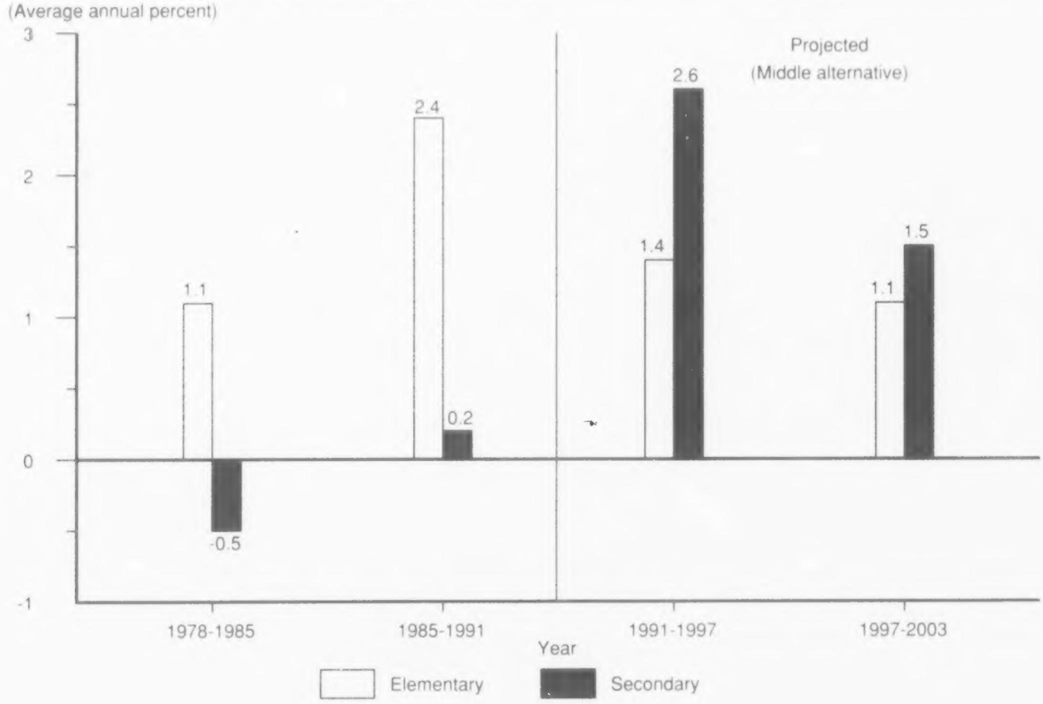

Figure 45
Elementary and secondary classroom teachers, by control of institution, with middle alternative projections: Fall 1978 to fall 2003

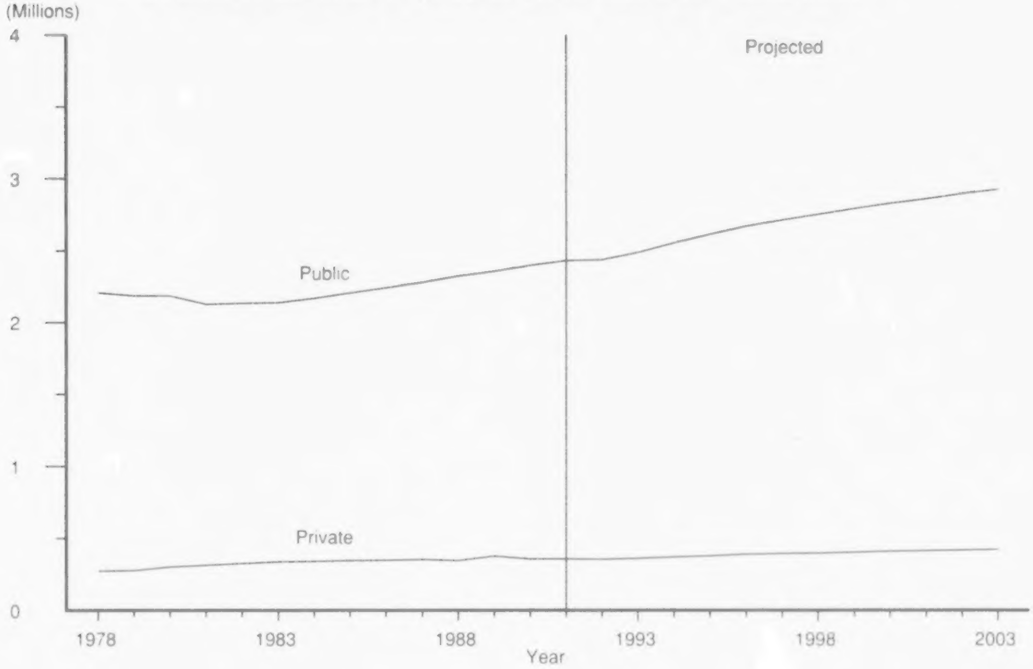

Figure 46
Average annual rates of change for classroom teachers, by control of institution

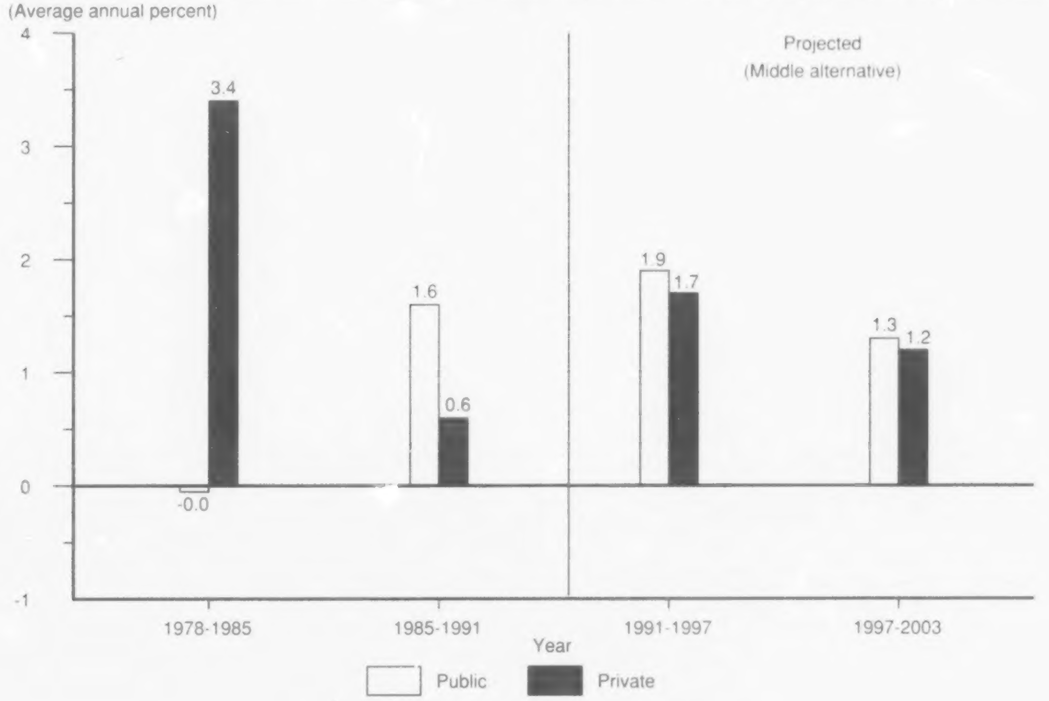

Figure 47

Pupil-teacher ratios, by organizational level, with middle alternative projections: Fall 1978 to fall 2003

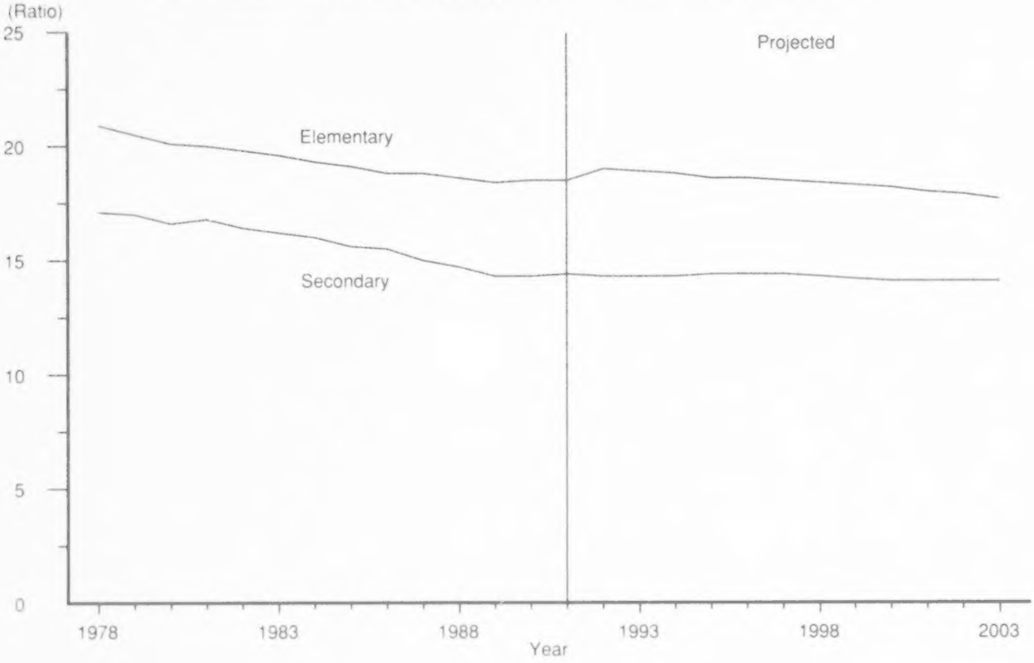

Figure 48

Pupil-teacher ratios, by organizational level and control, with middle alternative projections: Fall 1978 to fall 2003

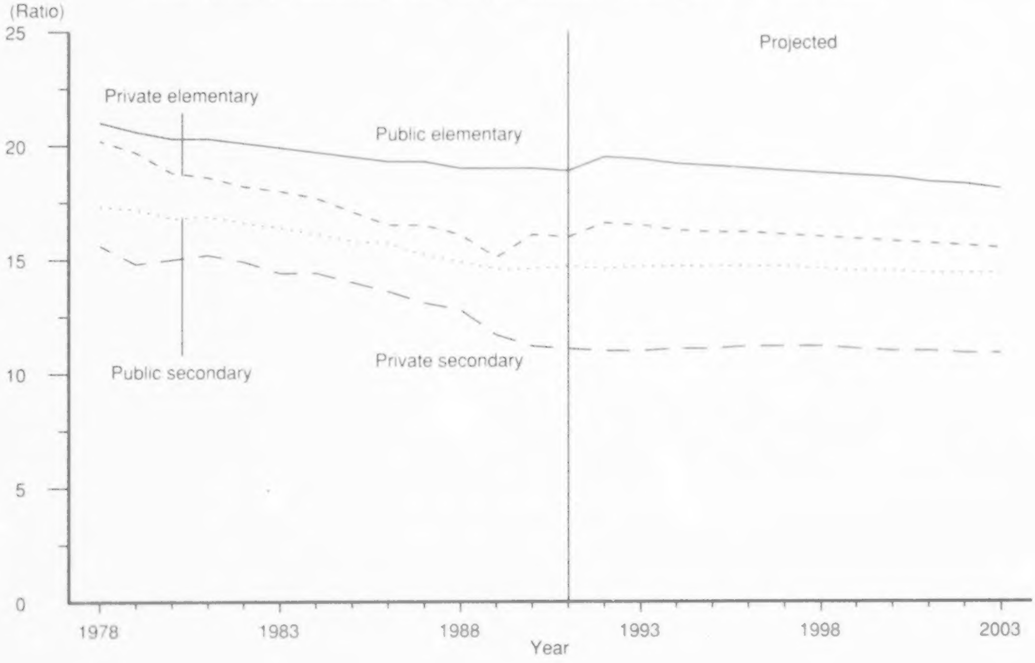

Table 32.—Classroom teachers in elementary and secondary schools, by control of institution and organizational level, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

(In thousands)

Year	Total			Public			Private		
	K–12	Elementary	Secondary	K–12	Elementary	Secondary	K–12	Elementary	Secondary
1978	2,479	1,376	1,103	2,207	1,191	1,016	272	185	87
1979	2,461	1,379	1,082	2,185	1,191	994	[1]276	188	88
1980	2,486	1,402	1,084	2,185	1,190	995	301	212	89
1981	2,440	1,404	1,037	2,127	1,183	945	[1]313	221	92
1982	2,458	1,413	1,045	2,133	1,182	951	[1]325	231	94
1983	2,476	1,426	1,050	2,139	1,186	953	337	240	97
1984	2,508	1,451	1,057	2,168	1,208	960	[1]340	243	97
1985	2,549	1,483	1,066	2,206	1,237	969	343	246	97
1986	2,592	1,521	1,071	2,244	1,271	973	[1]348	250	98
1987	2,632	1,564	1,068	2,279	1,307	973	[2]353	257	95
1988	2,668	1,604	1,064	2,323	1,353	970	[2]345	251	94
1989	2,734	1,662	1,072	2,357	1,387	970	[2]377	275	102
1990	2,752	1,680	1,072	2,398	1,426	972	[2]355	254	100
1991[2]	2,786	1,705	1,081	2,431	1,451	980	354	254	101
Middle alternative projections									
1992	2,791	1,679	1,112	2,437	1,429	1,008	354	250	104
1993	2,851	1,711	1,140	2,489	1,456	1,033	361	255	106
1994	2,923	1,748	1,175	2,553	1,488	1,065	370	260	110
1995	2,993	1,788	1,205	2,614	1,522	1,093	379	266	113
1996	3,057	1,822	1,235	2,670	1,551	1,119	387	271	115
1997	3,107	1,849	1,258	2,714	1,574	1,140	393	275	118
1998	3,152	1,875	1,277	2,754	1,596	1,158	399	279	119
1999	3,199	1,901	1,298	2,794	1,618	1,176	404	283	121
2000	3,240	1,924	1,317	2,831	1,637	1,194	410	287	123
2001	3,276	1,942	1,335	2,863	1,653	1,210	414	289	125
2002	3,314	1,957	1,357	2,896	1,666	1,230	418	292	127
2003	3,349	1,970	1,379	2,927	1,677	1,250	422	294	129
Low alternative projections									
1992	2,787	1,676	1,110	2,433	1,427	1,007	353	250	104
1993	2,818	1,687	1,131	2,461	1,435	1,026	357	251	106
1994	2,888	1,721	1,167	2,523	1,465	1,058	365	256	109
1995	2,966	1,765	1,201	2,591	1,502	1,089	375	263	112
1996	3,022	1,797	1,225	2,640	1,530	1,110	382	268	114
1997	3,061	1,817	1,243	2,674	1,547	1,127	387	271	116
1998	3,097	1,836	1,261	2,706	1,563	1,143	391	274	118
1999	3,136	1,856	1,280	2,739	1,579	1,160	396	276	120
2000	3,170	1,874	1,296	2,769	1,595	1,175	400	279	121
2001	3,196	1,886	1,310	2,793	1,605	1,188	403	281	122
2002	3,224	1,895	1,329	2,817	1,613	1,204	406	282	124
2003	3,250	1,903	1,347	2,841	1,619	1,221	409	283	126
High alternative projections									
1992	2,791	1,679	1,112	2,437	1,429	1,008	354	250	104
1993	2,862	1,720	1,142	2,499	1,463	1,035	363	256	107
1994	2,944	1,766	1,178	2,571	1,503	1,068	373	263	110
1995	3,017	1,811	1,206	2,634	1,541	1,093	382	270	113
1996	3,090	1,852	1,239	2,699	1,576	1,123	392	276	116
1997	3,152	1,883	1,269	2,753	1,603	1,150	399	281	119
1998	3,206	1,912	1,294	2,801	1,627	1,173	406	285	121
1999	3,260	1,941	1,320	2,848	1,651	1,196	412	289	123
2000	3,308	1,967	1,341	2,890	1,674	1,216	418	293	125
2001	3,350	1,989	1,361	2,926	1,693	1,233	423	296	127
2002	3,392	2,008	1,384	2,964	1,709	1,255	428	299	129
2003	3,435	2,026	1,409	3,002	1,724	1,278	434	302	132

[1] Estimated by NCES.
[2] Estimate.

NOTE: The numbers of elementary and secondary teachers reported separately by the National Education Association were prorated to the NCES totals for each year. Projections are based on data through 1991. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," *NCES Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," *NCES Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Private Elementary and Secondary Education: School Year 1988-89," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1989-90," *Early Estimates*; "Key Statistics for Public and Private Elementary and Secondary Education: School Year 1990-91," *Early Estimates*; and "Public and Private Elementary and Secondary Education: School Year 1991-92," *Early Estimates*. (This table was prepared June 1992.)

Table 33.—Pupil-teacher ratios in elementary and secondary schools, by control of institution and organizational level, with alternative projections: 50 States and D.C., fall 1978 to fall 2003

Year	Total		Public		Private	
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
1978	20.9	17.1	21.0	17.3	20.2	15.6
1979	20.5	17.0	20.6	17.2	[1]19.7	[1]14.8
1980	20.1	16.6	20.3	16.8	18.8	15.0
1981	20.0	16.8	20.3	16.9	[1]18.6	[1]15.2
1982	19.8	16.4	20.2	16.6	[1]18.2	[1]14.9
1983	19.6	16.2	19.9	16.4	18.0	14.4
1984	19.3	16.0	19.7	16.1	[1]17.7	[1]14.4
1985	19.1	15.6	19.5	15.8	17.1	14.0
1986	18.8	15.5	19.3	15.7	[1]16.5	[1]13.6
1987	18.8	15.0	19.3	15.2	[2]16.4	[2]13.1
1988	18.6	14.7	19.0	14.9	[2]16.1	[2]12.8
1989	18.4	14.3	19.0	14.6	[2]15.1	[2]11.7
1990	18.5	14.3	19.0	14.6	16.0	11.3
1991[2]	18.5	14.4	18.9	14.7	16.0	11.1
			Middle alternative projections			
1992	19.0	14.3	19.5	14.6	16.6	11.0
1993	18.9	14.3	19.4	14.7	16.5	11.0
1994	18.8	14.3	19.2	14.7	16.3	11.1
1995	18.6	14.4	19.1	14.7	16.2	11.1
1996	18.6	14.4	19.0	14.7	16.2	11.2
1997	18.5	14.4	18.9	14.7	16.1	11.2
1998	18.4	14.3	18.8	14.6	16.0	11.2
1999	18.3	14.2	18.7	14.5	15.9	11.1
2000	18.2	14.1	18.6	14.5	15.8	11.0
2001	18.0	14.1	18.4	14.4	15.7	11.0
2002	17.9	14.1	18.3	14.4	15.6	10.9
2003	17.7	14.1	18.1	14.4	15.5	10.9
			Low alternative projections (Based on high alternative projections of teachers)			
1992	19.0	14.3	19.5	14.6	16.6	11.0
1993	18.8	14.3	19.3	14.6	16.4	11.0
1994	18.6	14.3	19.0	14.6	16.2	11.0
1995	18.4	14.3	18.8	14.7	16.0	11.1
1996	18.3	14.3	18.7	14.6	15.9	11.1
1997	18.2	14.2	18.6	14.6	15.8	11.1
1998	18.1	14.1	18.5	14.4	15.7	11.0
1999	17.9	14.0	18.3	14.3	15.6	10.9
2000	17.8	13.9	18.2	14.2	15.5	10.8
2001	17.6	13.8	18.0	14.1	15.4	10.7
2002	17.4	13.8	17.8	14.1	15.2	10.7
2003	17.2	13.8	17.6	14.1	15.1	10.6
			High alternative projections (Based on low alternative projections of teachers)			
1992	19.1	14.3	19.5	14.7	16.6	11.0
1993	19.2	14.4	19.6	14.8	16.7	11.1
1994	19.1	14.4	19.5	14.8	16.6	11.1
1995	18.9	14.4	19.3	14.7	16.5	11.2
1996	18.8	14.5	19.3	14.8	16.4	11.3
1997	18.8	14.5	19.3	14.9	16.4	11.3
1998	18.8	14.5	19.2	14.8	16.4	11.3
1999	18.7	14.4	19.2	14.7	16.3	11.3
2000	18.6	14.4	19.1	14.7	16.2	11.2
2001	18.6	14.3	19.0	14.7	16.2	11.2
2002	18.5	14.4	18.9	14.7	16.1	11.1
2003	18.3	14.4	18.7	14.7	16.1	11.1

[1] Estimated by NCES.
[2] Estimate.

NOTE: The pupil-teachers ratios were derived from tables 2 and 32. Some data have been revised from previously published figures. Projections are based on data through 1991. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics,"*NCES Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools." *NCES Bulletin*, December1984; 1985 Private School Survey; "Key Statistics for Private Elementary and Secondary Education: School Year 1988-89," *Early Estimates*; "Key Statistics for Private Elementary and Secondary Education: School Year 1989-90," *Early Estimates*; "Key Statistics for Public and Private Elementary and Secondary Education: School Year 1990-91," *Early Estimates*; and "Public and Private Elementary and Secondary Education Statistics: School Year 1991-92," *Early Estimates*. (This table was prepared June 1992.)

Chapter 6

Expenditures of Public Elementary and Secondary Schools

Current expenditures are projected to increase by 42.3 percent and average annual teacher salaries in public elementary and secondary schools are projected to increase by 20.3 percent between school years 1991–92 and 2002–2003 in the middle set of projections presented in this chapter. These projections are based on assumptions concerning economic growth and assistance by state governments to local governments; these assumptions are discussed in this chapter. Other sets of projections, based on alternative economic scenarios, are also discussed. No projections for private schools are presented as there are no regular data collections for private school expenditures.

Current Expenditures

Past Trends

Current expenditures, which had already been in a period of growth, have continued to increase since 1977–78. These expenditures, in constant 1990–91 dollars, amounted to $156.3 billion in 1977–78 and are estimated to reach $206.6 billion in 1991–92, an increase of 32.2 percent (table 34 and figure 49). At the same time, current expenditures per pupil in average daily attendance rose 36.6 percent over 1977–78 expenditures, to an estimated $5,327 in 1991–92 (table 34 and figures 50 and 51). Current expenditures per pupil in fall enrollment (table 35) rose 37.7 percent. Expenditures per pupil rose more rapidly than current expenditures because of a decline in enrollment.

Disposable income per capita has increased substantially since 1977–78, enabling more money to be spent on education. (See figure 52 for a comparison of the growth rates of current expenditures per pupil and disposable income per capita.)

There was also a rapid rise in state education aid to local governments during the period from 1977–78 to 1991–92. As education revenue from state sources increased, local governments increased spending on education. (See figure 53 for a comparison of the growth rates of current expenditures per pupil and revenue receipts from state sources per capita).

Another factor resulting in higher current expenditures per pupil has been the decrease in the ratio of number of pupils to the population as a whole; that is, the fewer pupils per person, the more money can be spent per pupil with the same level of per capita revenue.

The only time in the past 15 years in which current expenditures decreased was from 1978–79 to 1981–82. The following three events may account for part of that decline. First, disposable income per capita and state education aid per capita were in periods of either slow growth or decline at that time. Second, this was the period of the "tax revolt," when many voters expressed their displeasure at the spending habits of state or local governments by voting for measures that would limit either taxes or spending. It was also a period of high inflation, when state and local governments may have had difficulty anticipating the rapid rise in school costs.

Current expenditures have increased each year since 1981–82. The percent increase has not been constant over that time however. The largest of the percent increases occurred from 1984–85 to 1988–89. That was the period when disposable income per capita and state education aid per capita were also increasing most rapidly. Since 1988–89 the percent change in current expenditures has not been increasing as rapidly. The percent changes in disposable income per capita and state education aid per capita have been increasing at a lower rate than in the mid 1980s.

The percentage of total disposable income spent on public elementary and secondary school current expenditures fell from 5.3 percent in 1977–78 to 5.1 percent in 1991–92, partly as a result of the 3.2 percent decline in enrollments that occurred during that period. In comparison, the population grew by 14.4 percent during that period.

Continuing an earlier trend, current expenditures per pupil as a percentage of disposable income per capita rose from 29.2 percent in 1977–78 to an estimated 33.3 percent in 1991–92. With fewer students, there was more money to be spent per student.

Alternative Projections

The economic climate of the nation and the amount of revenue receipts provided by state government to local government for education are important factors in determining the level of spending on elementary and secondary education (and revenue receipts from states are influenced by the state of the economy). Regression equations were used to develop the forecasts for current expenditures, with a measure of the state of the economy (disposable income per capita) and the amount of revenue receipts from state sources for education used as two of the factors influencing current expenditures. Several plausible growth paths for disposable income per capita and revenue receipts from state sources were used to produce alternative sets of projections for current expenditures.

For any of the sets of alternative forecasts to be close to the actual values, the underlying assumptions should resemble what actually occurs. It is also important that the relationships that have existed among the variables in the past continue throughout the projection period.

Three sets of projections are presented for current expenditures in this chapter. These sets of forecasts are based on alternative projections for disposable income per capita and local government revenue receipts from state sources per capita. The forecasts for disposable income per capita were developed by DRI/McGraw-Hill (DRI), an economic consulting firm, and the forecasts for revenue receipts from state sources were developed using forecasts from DRI. The assumptions underlying each set of alternative projections for current expenditures are described briefly. For more information about these assumptions and about the methodology used to compute these forecasts, see appendix A5.

The middle alternative projections are based on the assumptions that disposable income per capita will increase at rates between 1.0 and 2.3 percent during the period from 1992–93 to 2002–2003 and that revenue receipts from state sources per capita will increase at rates between 1.7 percent and 2.9 percent.

The low alternative projections are based on the assumptions that disposable income per capita will change at rates between 0.2 and 2.8 percent and that revenue receipts from state sources per capita will increase at rates between minus 1.5 percent and 2.4 percent.

The high alternative projections are based on the assumptions that disposable income will increase at rates between 1.2 and 2.4 percent and that revenue receipts from state sources will increase at rates between 2.2 percent and 5.8 percent.

A third factor influencing the growth in current expenditures in these projections is the ratio of enrollment (as measured by average daily attendance) to the population. The same projections for enrollment and the population are used in the production of all sets of projections for current expenditures presented in this chapter.

Enrollments are projected to increase steadily during the forecast period. This steady increase should have a negative impact on expenditures per pupil. However, this increase in enrollment may also have a strong positive effect on total expenditures. With enrollments rising, there will be a change in the previous trend of total expenditures growing at a lower rate than expenditures per pupil.

In the middle alternative projections, current expenditures in constant 1990–91 dollars are projected to grow slowly at first, as the economy comes out of the 1990–92 downturn, and then continue to rise thereafter, reaching $294.0 billion in 2002–2003. This is an increase of 42.3 percent over the estimated level for 1991–92. Current expenditures per pupil in average daily attendance are projected to increase by 23.8 percent to $6,593 (table 34 and figures 50 and 51). As mentioned above, due to the increases projected for enrollments, total current expenditures are projected to increase more rapidly than expenditures per pupil.

In the middle alternative projection, total current expenditures per pupil as a percentage of total disposable income are projected to increase from 5.1 percent to 5.8 percent. One cause of this projected increase is the 15.0-percent increase in enrollment projected for this period.

Current expenditures per pupil as a percentage of disposable income per capita are also projected to increase, from 33.3 percent to 35.3 percent. This increase is smaller than that which occurred from 1977–78 to 1991–92. The rapid increase projected for enrollment compared with the increase projected for the population (15 percent for enrollment, 7.8 percent for the population) is one cause of this relatively small increase.

In the low alternative projections, disposable income per capita is assumed to stay virtually unchanged from 1991–92 to 1992–93 and revenue receipts from state sources per capita are assumed to fall slightly. The combination of these two events would result in total current expenditures and expenditures per pupil falling from 1991–92 to 1992–93. For the rest of the forecast period, steady but slow growth is projected. Current expenditures are projected to increase by 26.6 percent to $261.4 billion in 2002–2003. Current expenditures per pupil in average daily attendance are projected to increase by 10 percent to $5,862.

In the high alternative projections, both disposable income per capita and revenue receipts from state sources are projected to increase more rapidly than in the middle set of projections. As a result, both current expenditures and current expenditures per pupil are projected to increase more rapidly than in the middle set of projections. Current expenditures are projected to increase by approximately 53.8 percent to $317.7 billion in 2002–2003. Current expenditures per pupil in average daily attendance are projected to increase by 33.7 percent to $7,123.

Salaries

Recent History

The period from 1977–78 to 1991–92 has been dominated by three different patterns for teacher salaries in constant dollars (table 36 and figures 54 and 55).

Teacher salaries, already in a period of decline, fell 10.1 percent from 1977–78 to 1980–81, from $30,373 to $27,299 (average annual salary) in constant 1990–91 dollars. The period of greatest decline coincided with the period when the decline in enrollments was greatest. (See figure 56 for a comparison of the growth rates for teacher salaries and average daily attendance.) It also coincided with the period when the economy and current expenditures were falling. (See figure 57 for a comparison of the growth rates for teacher salaries and current expenditures per pupil.)

After this period of decline, teacher salaries entered a period of steady and relatively rapid growth. From 1980–81 to 1986–87, teacher salaries increased 17.2 percent, from $27,299 to $31,987. During this period, the revenues of states governments were increasing rapidly. It was during that period when enrollment, which had also been in a period of steady decline, began increasing again.

Since 1986–87, teacher salaries have increased every year but one. These increases however have all been smaller than those from 1980–81 to 1986–87 as teacher salaries increased only 4.2 percent from 1986–87 to 1991–92. Since 1986–87, the economy and revenues of state and local governments have not been increasing as rapidly as in the middle of the 1980s.

In the 1970s, the number of people preparing to become teachers was much greater than the number of openings for newly qualified teachers. The drop in teacher salaries during this time may be attributed, in part, to excess supply. Then the number of people preparing to become teachers dropped, and eventually, the decline in teacher salaries stopped. Some of the increase in teacher salaries that occurred during the 1980s may be a result of the reforms enacted to encourage more people to enter the teaching profession.

Alternative Projections

As with current expenditures, a multiple linear regression model was developed for teacher salaries. Teacher salaries are seen as being related to current expenditures and enrollments. (See appendix A5.) Also like current expenditures, these projections depend on the projections of these inputs, and assume that the relationships that have existed among the variables in the past will continue throughout the projection period.

Three sets of alternative projections of teacher salaries—middle, low, and high—have been developed. Each alternative is based on one of the alternative sets of projections for current expenditures presented earlier in this chapter.

The projections for average daily attendance were produced by using the growth rates of the projections for fall enrollment presented in chapter 1. The same projections for average daily attendance were used for each of the three sets of projections for teacher salaries. Enrollments are projected to increase throughout the projection period, with the greatest percent increase occurring in the early and mid-1990s.

In the middle alternative projection, the average teacher salary in constant 1990–91 dollars is projected to reach $40,092 in 2002–2003 (table 36 and figure 54). This is a 20.3-percent increase from the level estimated for 1991–92. The greatest percent increases in salaries are projected to occur from 1993–94 to 1996–97. One reason for this is that this period is when the most rapid increases in enrollments are projected (figure 56).

In the low alternative projections, teacher salaries are projected to decline from 1991–92 to 1992–93 and then rise throughout the projection period. The average salary is projected to reach $37,039 in 2002–2003, an increase of about 11.1 percent from 1991–92. (See figure 55 for a comparison of the growth rates for the alternative sets of projections.)

In the high alternative projection, the average teacher salary is projected to reach $42,303 in 2002–2003, an increase of about 26.9 percent.

Figure 49
Current expenditures of public schools (in constant 1990-91 dollars), with alternative projections: 1977-78 to 2002-2003

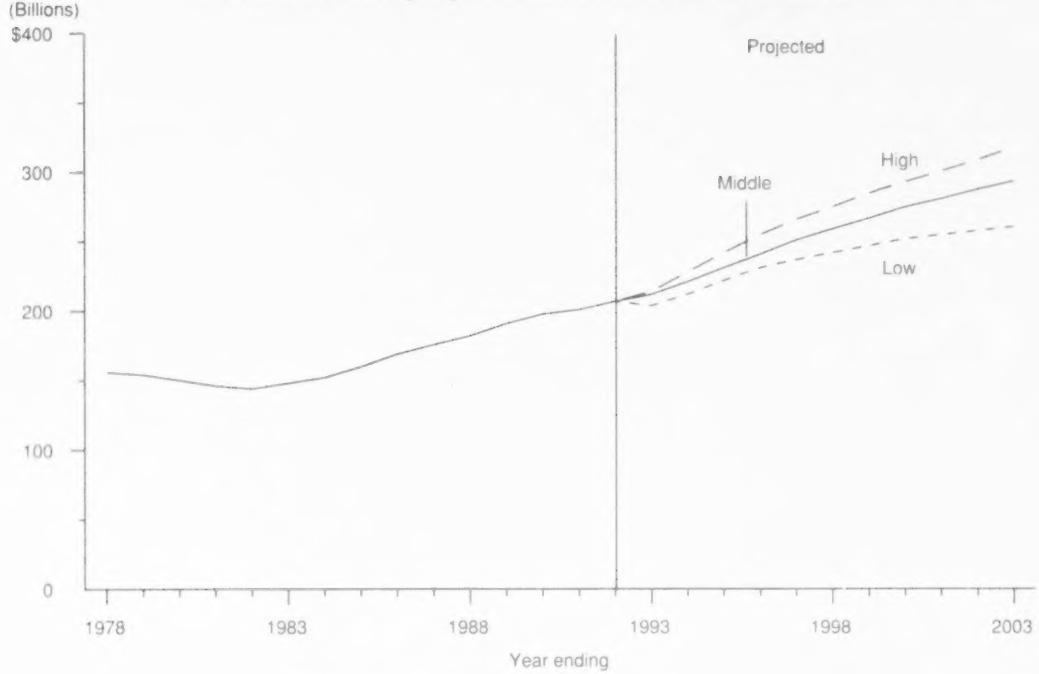

Figure 50
Current expenditures per pupil in average daily attendance (in constant 1990-91 dollars) of public schools, with alternative projections: 1977-78 to 2002-2003

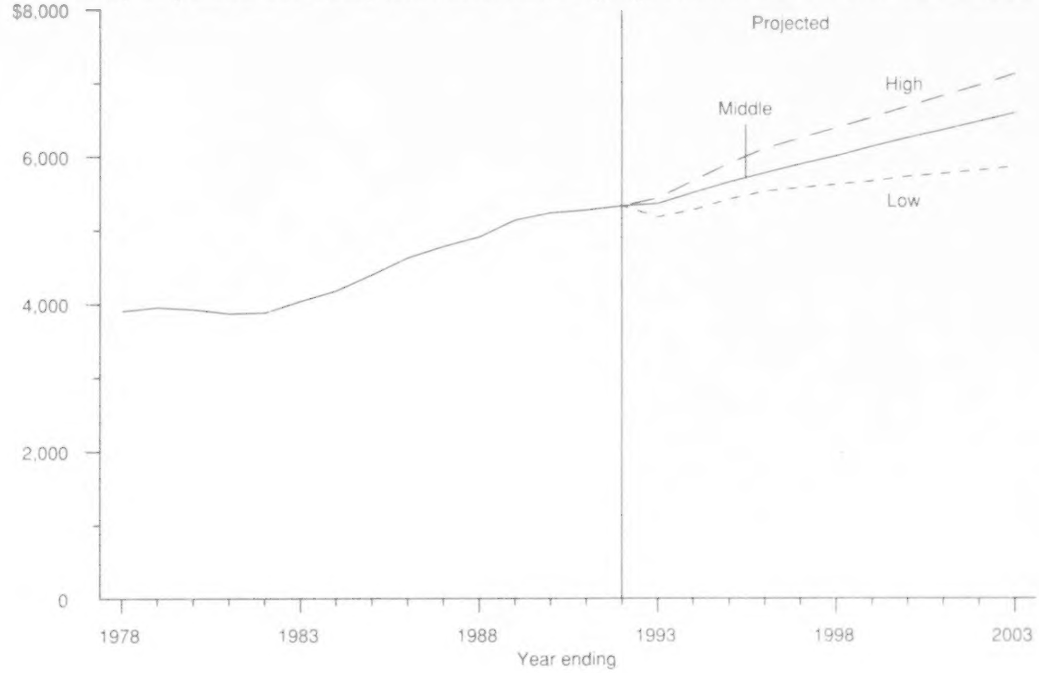

Figure 51

Percent change in current expenditures per pupil in average daily attendance (in constant dollars) of public schools, with alternative projections: 1977-78 to 2002-2003

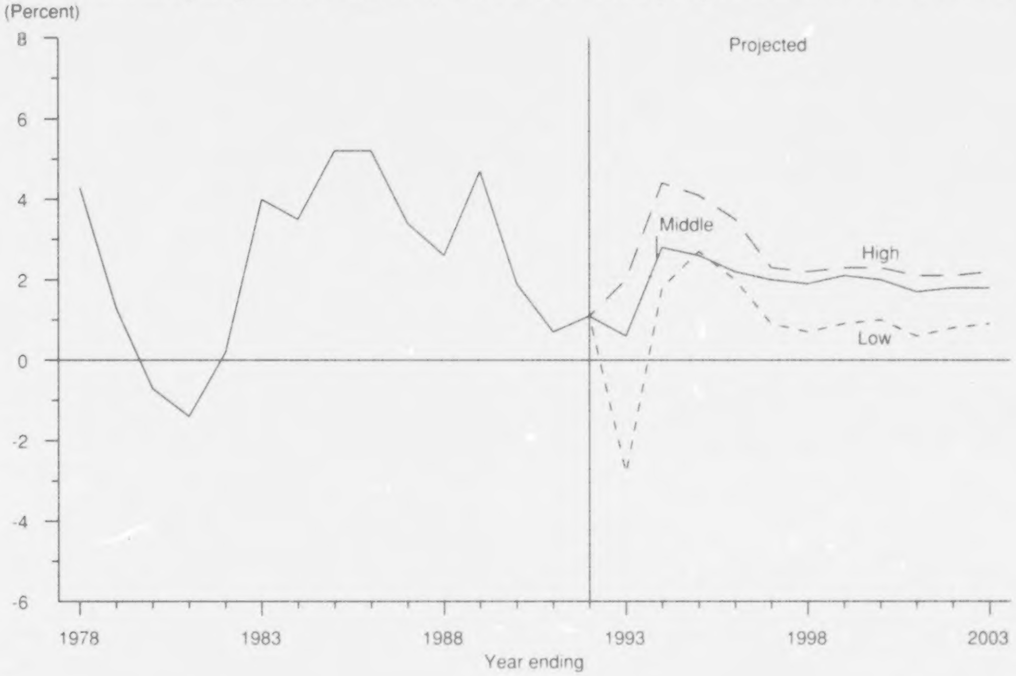

Figure 52

Percent change in current expenditures per pupil in average daily attendance of public schools and disposable personal income per capita (both in constant dollars), with projections: 1977-78 to 2002-2003

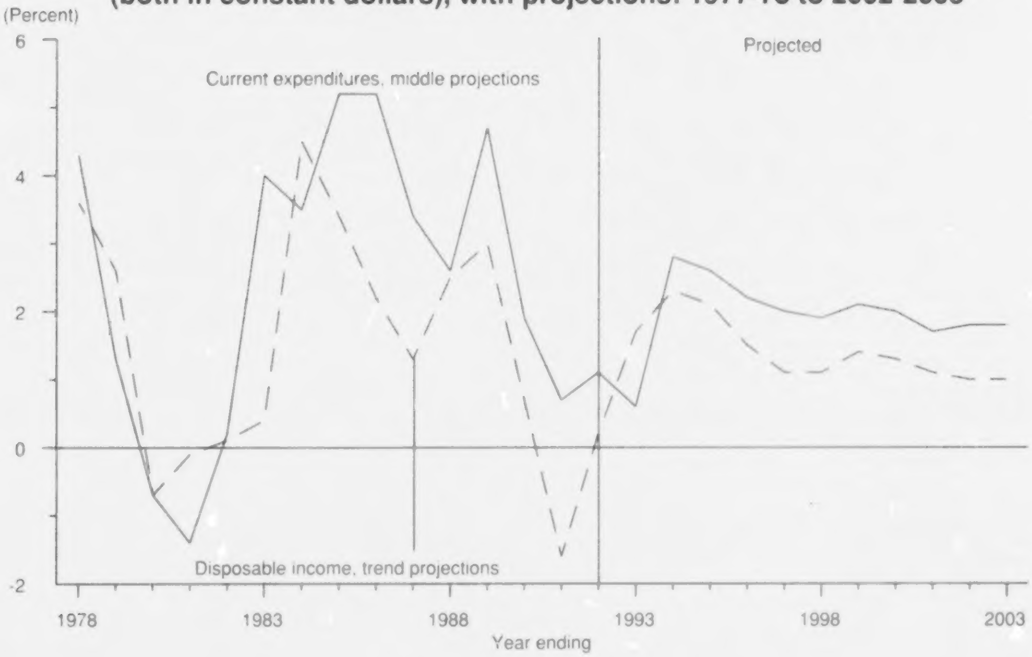

Figure 53

Percent change in current expenditures per pupil in average daily attendance of public schools and education revenue receipts from state sources per capita (both in constant dollars), with projections: 1977-78 to 2002-2003

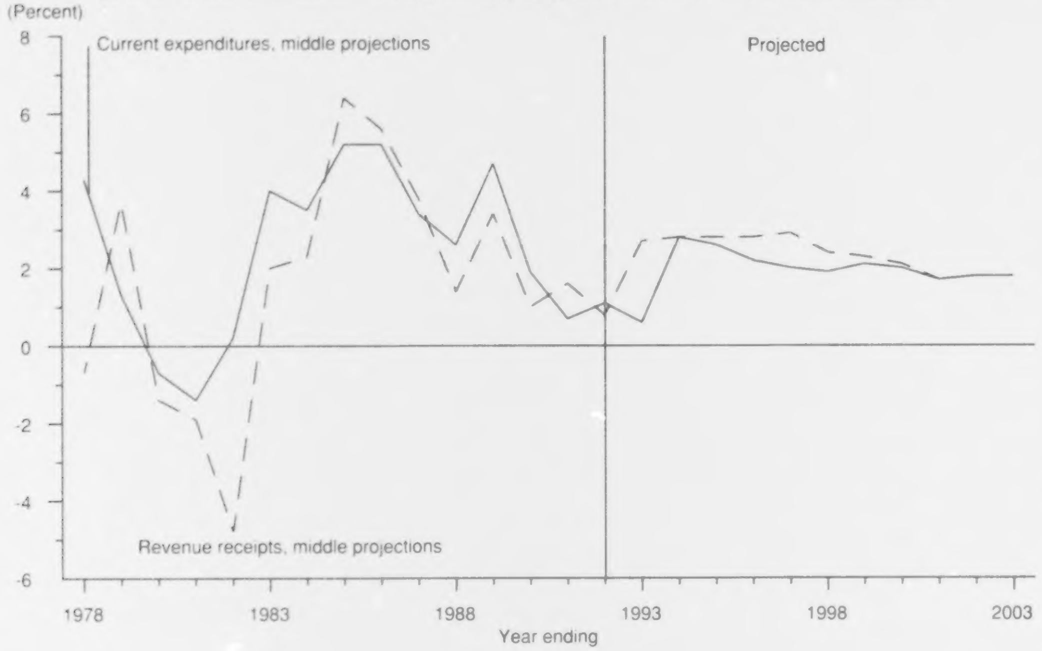

Figure 54
Average annual salaries of teachers (in constant 1990-91 dollars) in public schools, with alternative projections: 1977-78 to 2002-2003

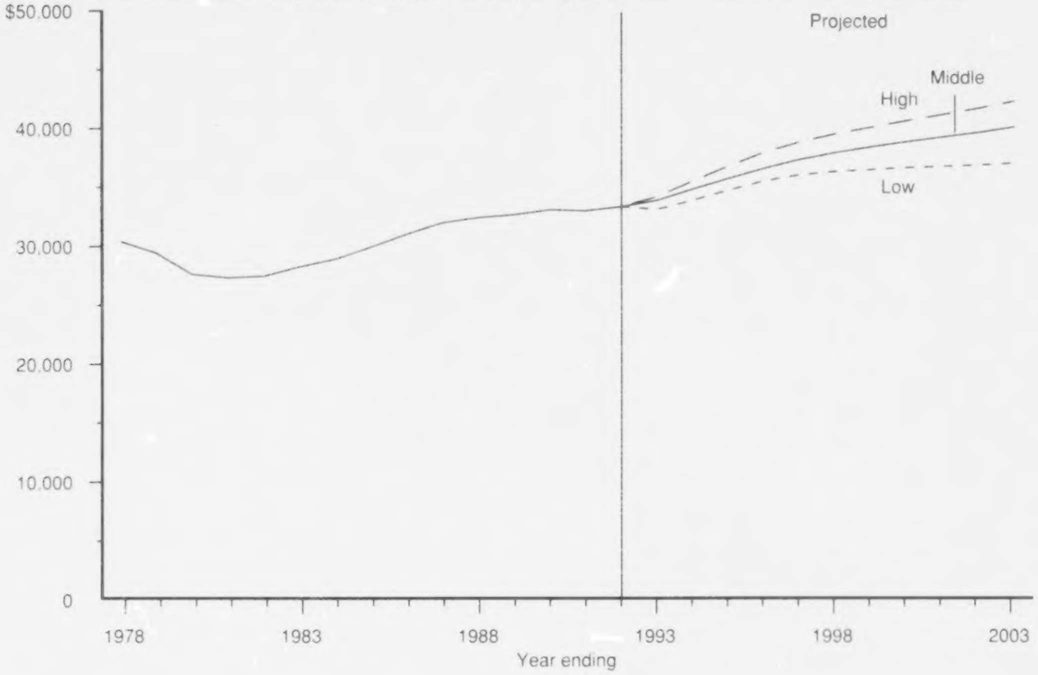

Figure 55
Percent change in average annual salaries of teachers (in constant dollars) in public schools, with alternative projections: 1977-78 to 2002-2003

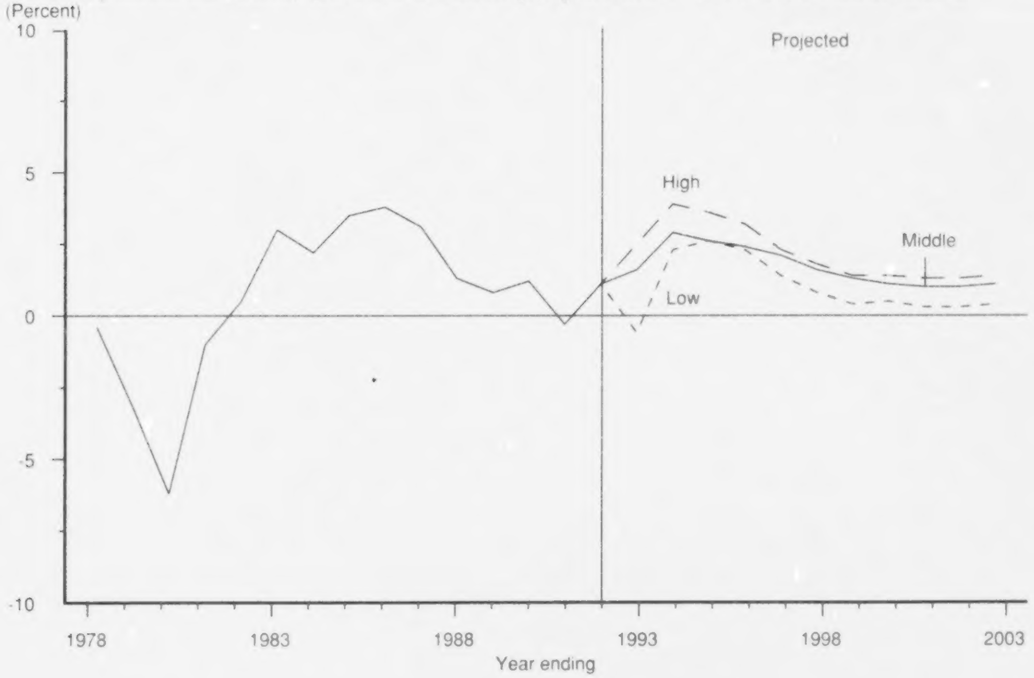

Figure 56

Percent change in average annual salaries of teachers (in constant dollars) in public schools and average daily attendance, with projections: 1977-78 to 2002-2003

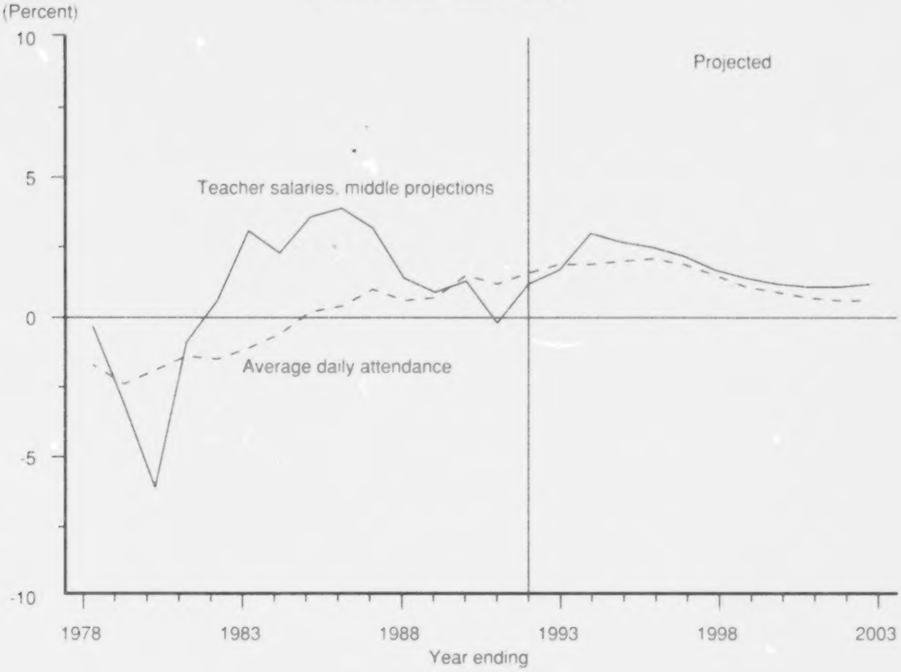

Figure 57

Percent change in average annual salaries of teachers in public schools, and current expenditures per pupil in average daily attendance of public schools (both in constant dollars), with projections: 1977-78 to 2002-2003

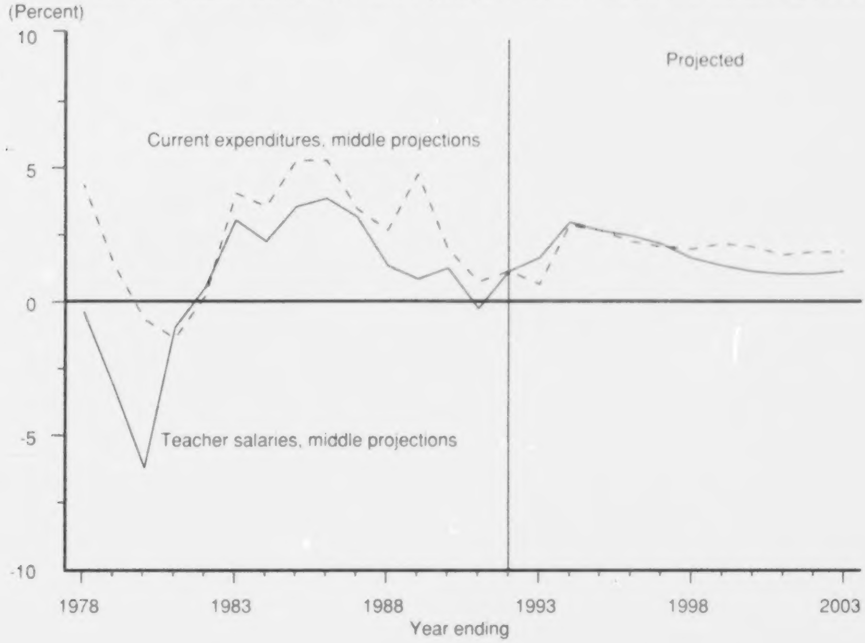

Table 34.—Current expenditures and current expenditures per pupil in average daily attendance (ADA) in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	ADA (in thousands)	Current expenditures			
		Constant 1990–91 dollars[1]		Current dollars[2]	
		Total (in billions)	Per pupil in ADA	Total (in billions)	Per pupil in ADA
1978	40,080	$156.3	$3,900	$73.1	$1,823
1979	39,076	154.4	3,952	79.0	2,020
1980	38,289	150.2	3,924	87.0	2,272
1981	37,704	145.9	3,870	94.3	2,502
1982	37,095	143.9	3,879	101.1	2,726
1983	36,636	147.8	4,035	108.3	2,955
1984	36,363	151.9	4,178	115.4	3,173
1985	36,404	160.0	4,396	126.3	3,470
1986	36,523	168.8	4,623	137.2	3,756
1987	36,864	176.2	4,780	146.4	3,970
1988	37,051	181.7	4,903	157.1	4,240
1989	37,268	191.3	5,133	173.1	4,645
1990	37,779	197.7	5,232	187.4	4,960
1991[3]	38,209	201.4	5,271	201.4	5,271
1992[3]	38,779	206.6	5,327	213.2	5,499
		Middle alternative projections			
1993	39,471	211.5	5,360	226.0	5,726
1994	40,185	221.3	5,507	245.1	6,098
1995	40,955	231.5	5,652	265.3	6,477
1996	41,774	241.4	5,778	286.0	6,845
1997	42,544	250.7	5,893	308.0	7,240
1998	43,129	259.1	6,006	—	—
1999	43,558	267.2	6,134	—	—
2000	43,903	274.6	6,255	—	—
2001	44,171	281.1	6,363	—	—
2002	44,392	287.6	6,478	—	—
2003	44,598	294.0	6,593	—	—
		Low alternative projections			
1993	39,471	204.4	5,180	218.2	5,527
1994	40,185	212.0	5,274	233.6	5,813
1995	40,955	221.8	5,416	252.1	6,156
1996	41,774	230.8	5,525	272.7	6,527
1997	42,544	237.2	5,575	294.3	6,917
1998	43,129	242.3	5,617	—	—
1999	43,558	246.9	5,669	—	—
2000	43,903	251.5	5,729	—	—
2001	44,171	254.7	5,766	—	—
2002	44,392	258.0	5,812	—	—
2003	44,598	261.4	5,862	—	—
		High alternative projections			
1993	39,471	214.5	5,434	229.3	5,809
1994	40,185	227.9	5,671	253.1	6,298
1995	40,955	241.8	5,904	278.6	6,802
1996	41,774	255.2	6,108	302.8	7,248
1997	42,544	265.9	6,250	324.8	7,633
1998	43,129	275.4	6,386	—	—
1999	43,558	284.5	6,532	—	—
2000	43,903	293.4	6,683	—	—
2001	44,171	301.5	6,825	—	—
2002	44,392	309.3	6,968	—	—
2003	44,598	317.7	7,123	—	—

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[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

[3] Current expenditures are early estimates. Average daily attendance is estimated on the basis of past data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*; Common Core of Data survey; and the Early Estimates survey; and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1991–92. Copyright 1992 by the National Education Association. All rights reserved.) (This table prepared May 1992.)

Table 35.—Current expenditures and current expenditures per pupil in fall enrollment in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Fall enrollment[1] (in thousands)	Current expenditures			
		Constant 1990–91 dollars[2]		Current dollars[3]	
		Total (in billions)	Per pupil in fall enrollment	Total (in billions)	Per pupil in fall enrollment
1978	43,577	$156.3	$3,587	$73.1	$1,677
1979	42,551	154.4	3,629	79.0	1,855
1980	41,651	150.2	3,607	87.0	2,088
1981	40,877	145.9	3,570	94.3	2,307
1982	40,044	143.9	3,593	101.1	2,525
1983	39,566	147.8	3,737	108.3	2,736
1984	39,252	151.9	3,870	115.4	2,940
1985	39,208	160.0	4,082	126.3	3,222
1986	39,422	168.8	4,283	137.2	3,479
1987	39,753	176.2	4,433	146.4	3,682
1988	40,007	181.7	4,541	157.1	3,927
1989	40,189	191.3	4,760	173.1	4,307
1990	40,543	197.7	4,876	187.4	4,622
1991[4]	41,224	201.4	4,885	201.4	4,885
1992[4]	41,839	206.6	4,937	213.2	5,097
		Middle alternative projections			
1993	42,586	211.5	4,967	226.0	5,308
1994	43,356	221.3	5,105	245.1	5,652
1995	44,187	231.5	5,239	265.3	6,003
1996	45,071	241.4	5,356	286.0	6,345
1997	45,901	250.7	5,462	308.0	6,711
1998	46,533	259.1	5,567	—	—
1999	46,995	267.2	5,685	—	—
2000	47,368	274.6	5,798	—	—
2001	47,657	281.1	5,898	—	—
2002	47,895	287.6	6,004	—	—
2003	44,598	294.0	6,111	—	—
		Low alternative projections			
1993	42,586	204.4	4,801	218.2	5,123
1994	43,356	212.0	4,889	233.6	5,387
1995	44,187	221.8	5,020	252.1	5,706
1996	45,071	230.8	5,121	272.7	6,050
1997	45,901	237.2	5,167	294.3	6,411
1998	46,533	242.3	5,206	—	—
1999	46,995	246.9	5,255	—	—
2000	47,368	251.5	5,310	—	—
2001	47,657	254.7	5,344	—	—
2002	47,895	258.0	5,387	—	—
2003	44,598	261.4	5,433	—	—
		High alternative projections			
1993	42,586	214.5	5,036	229.3	5,384
1994	43,356	227.9	5,257	253.1	5,837
1995	44,187	241.8	5,472	278.6	6,304
1996	45,071	255.2	5,662	302.8	6,718
1997	45,901	265.9	5,793	324.8	7,075
1998	46,533	275.4	5,919	—	—
1999	46,995	284.5	6,054	—	—
2000	47,368	293.4	6,194	—	—
2001	47,657	301.5	6,326	—	—
2002	47,895	309.3	6,459	—	—
2003	44,598	317.7	6,602	—	—

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[1] Each enrollment number is for the fall of the school year ending in the school year shown in column 1. Hence, the enrollment number listed for 1978 is for fall 1977.

[2] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[3] Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

[4] Current expenditures are early estimates.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*; *Statistics of Public Elementary and Secondary Schools*; "Selected Public and Private Elementary and Secondary Education Statistics," NCES Bulletin, October 23, 1979; Common Core of Data survey; and the Early Estimates survey; and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1991–92. Copyright 1992 by the National Education Association. All rights reserved.) (This table prepared May 1992.)

Table 36.—Average annual salaries of classroom teachers in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Constant 1990–91 dollars[1]	Current dollars[2]
1978	$30,373	$14,198
1979	29,400	15,032
1980	27,582	15,970
1981	27,299	17,644
1982	27,430	19,274
1983	28,259	20,695
1984	28,879	21,935
1985	29,896	23,600
1986	31,020	25,199
1987	31,987	26,569
1988	32,418	28,034
1989	32,677	29,568
1990	33,071	31,350
1991	32,977	32,977
1992	33,337	34,413
	Middle alternative projections	
1993	33,874	36,193
1994	34,849	38,586
1995	35,745	40,959
1996	36,605	43,364
1997	37,374	45,921
1998	37,971	—
1999	38,446	—
2000	38,873	—
2001	39,263	—
2002	39,663	—
2003	40,092	—
	Low alternative projections	
1993	33,123	35,347
1994	33,875	37,332
1995	34,757	39,510
1996	35,549	41,994
1997	36,048	44,722
1998	36,345	—
1999	36,506	—
2000	36,675	—
2001	36,769	—
2002	36,883	—
2003	37,039	—
	High alternative projections	
1993	34,184	36,543
1994	35,533	39,457
1995	36,797	42,391
1996	37,983	45,068
1997	38,864	47,469
1998	39,555	—
1999	40,106	—
2000	40,659	—
2001	41,190	—
2002	41,711	—
2003	42,303	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1991–92. Copyright 1992 by the National Education Association. All rights reserved.) (This table prepared August 1992.)

Chapter 7

Expenditures of Institutions of Higher Education

The steady growth in higher education expenditures which has marked the 1980s is expected to continue throughout the 1990s. Key assumptions behind these projections are that the economy continues to grow at a steady rate, that inflation rates remain near current levels, and that enrollments increase as in the middle alternative projections presented in chapter 2. Projections based on alternative economic scenarios are discussed below.

The higher education system is examined by both control of institution (public versus private) and by type of institution (4-year versus 2-year). For each of these sectors of higher education, two different types of expenditures—current-fund expenditures and educational and general expenditures—are examined. All expenditure data have been adjusted for inflation. Since the historical trends and the projections of current-fund expenditures and educational and general expenditures are very similar, emphasis is given to current-fund expenditures.

Past Trends

Following a well-established trend, current-fund expenditures have increased significantly since 1977–78 (table 37 and figure 58). In real terms, current-fund expenditures increased 44.4 percent from 1977–78 to 1989–90 and are estimated to have increased another 6.0 percent by 1991–92. The rate of increase in current-fund expenditures during this period has not been consistent. There have been years of rapid growth and slow growth, and even decline. The period from 1977–78 to 1991–92 can be broken up into three time periods. Factors influencing current-fund expenditures during these periods include: (1) the economy as a whole, and, for public institutions, the economic situation of state and local governments; (2) the inflation rate; and (3) enrollments.

The period from 1977–78 to 1981–82 experienced slow growth in current-fund expenditures. During that period, current–fund expenditures increased 1.8 percent, from $98.3 billion to $100.1 billion in constant 1990–91 dollars. The economy was in a period of slow growth at that time. One measure of the state of the economy, disposable income per capita, rose only 1.9 percent. Inflation was also increasing rapidly. The average inflation rate for that period was 9.9 percent as measured by the Consumer Price Index.

Current-fund expenditures have risen steadily since 1981-82. From 1981-82 to 1989-90, the last year for which there are actual data, current-fund expenditures increased 41.9 percent.

The greatest increases occurred from 1983–84 to 1986–87 when current–fund expenditures rose 27.2 percent. The economy was increasing steadily during that period with disposable income per capita rising 12.2 percent.

Much of the 11.6 percent increase that occurred from 1986–87 to 1989–90 was due to the rapid increase in enrollments that occurred during that time. The number of students as measured by full-time-equivalent enrollment rose 7.9 percent. From 1983–84 to 1986–87, full-time-equivalent enrollment declined by 1.1 percent.

While current-fund expenditures in both public and private institutions rose, they did not rise at the same rate. From 1977–78 to 1989–90, current-fund expenditures increased 37.7 percent in public institutions and 58.1 percent in private institutions.

For the period under examination, educational and general expenditures have been an almost constant percentage of current-fund expenditures (about 78 percent). Hence, the trend for educational and general expenditures is virtually identical to that for current-fund expenditures (table 38 and figure 59). Total educational and general expenditures in constant dollars increased 43.6 percent from 1977–78 to 1989–90 and are expected to increase another 5.2 percent by 1991–92. There was a 35.6 percent increase in educational and general expenditures in public colleges from 1977–78 to 1989–90 and a 61.7 percent increase in private colleges.

Since the trends of current-fund expenditures for the different sectors show some differences, the data are examined separately for each sector, except private 2-year institutions. Expenditures are examined both as a total and per student in full-time-equivalent (FTE) enrollment.

The trend for private 2-year projections is not shown separately because there have been significant additions to the universe of private 2-year institutions since 1977–78. Private 2-year institutions comprise the smallest of the higher education sectors. In 1989–90, they accounted for only 0.9 percent of total current-fund expenditures and 2.2 percent of FTE enrollment.

Public 4-Year Institutions

The trend for current-fund expenditures in public 4-year institutions is very similar to that for all institutions (table 39). The period from 1977–78 to 1981–82 saw very slow growth, with current-fund expenditures rising only 0.8 percent. Since then, current expenditures have increased steadily. From 1981–82 to 1989–90 current-fund expenditures increased 38.6 percent and another 6.5-percent increase is estimated for the following two years. As with the trend for all institutions, the most rapid growth occurred from 1981–82 to 1986–87 when current-fund expenditures rose 25.0 percent.

When current-fund expenditures are examined on a per student basis, a somewhat different pattern emerges. With the slowing down of the economy, the rise in inflation, and the increase in enrollment, current-fund expenditures per student fell 3.3 percent from 1977–78 to 1981–82. As with total current-fund expenditures, current-fund expenditures per student rose each year from 1981–82 to 1989–90. Almost all of the increase occurred from 1981–82 to 1986–87 when current-fund expenditures per student rose 22.5 percent. From 1986–87 to 1989–90, when FTE enrollment rose 7.6 percent, current-fund expenditures per student only rose 3.1 percent. Current-fund expenditures per student are estimated to have increased 0.9 percent from 1989–90 to 1991–92.

The trend for educational and general expenditures (table 40) is similar to that for current-fund expenditures.

Public 2-Year Institutions

Public 2-year institutions show a similar trend to public 4-year institutions (table 41). There was a 3.0 percent decrease in current-fund expenditures in public 2-year institutions from 1977–78 to 1981–82. This was followed by an 18.3 percent increase from 1981–82 to 1986–87. A further 12.1 increase occurred from 1986–87 to 1989–90, when enrollments rose 10.8 percent. Current-fund expenditures are estimated to have increased 2.4 percent from 1989–90 to 1991–92.

As with public 4-year current-fund expenditures, a somewhat different pattern emerges when public 2-year current-fund expenditures are placed in per student terms. With total current-fund expenditures falling 3.0 percent and enrollments rising 9.1 percent, current-fund expenditures per student fell 11.1 percent from 1977–78 to 1981–82. Between 1981–82 and 1986–87, current-fund expenditures per student rose 22.6 percent. From 1986–87 to 1989–90, current-fund expenditures per student rose only 1.2 percent. A 0.3 percent decrease was estimated for the period from 1989–90 to 1991–92.

The trend for educational and general expenditures (table 42) is similar to that for current-fund expenditures.

Private 4-Year Institutions

From 1977–78 until 1981–82, current-fund expenditures in private 4-year institutions rose 4.8 percent. Like public institutions, current-fund expenditures rose rapidly throughout the rest of the 1980's. From 1981–82 to 1989–90, current-fund expenditures rose 50.9 percent. Current-fund expenditures are estimated to have increased 6.4 percent from 1989–90 to 1991–92 (table 43).

With the increase in the number of students and the slowdown in the economy, expenditures per student fell 2.7 percent from 1976–77 to 1981–82. Since then, current-fund expenditures per student have been rising. From 1981–82 to 1986–87, current-fund expenditures per student rose 31.9 percent. After that, as enrollments increased, current expenditures per student have continued to increase, but not at as rapid a rate. From 1986–87 to 1989–90, current expenditures per student rose 6.3 percent. A 0.4 percent increase has been estimated for the period from 1989–90 to 1991–92.

The trend for educational and general expenditures (table 44) is similar to that for current-fund expenditures.

Alternative Projections

Projections have been prepared for each of the sectors of higher education. With the exception of the private 2-year sector, these projections have been developed using regression models. In most cases, expenditures per student are seen as being related to the state of the economy (as measured by either disposable income per capita or the revenues of state and local governments per capita), the inflation rate, and enrollments. (For more details, see appendix A6.) Hence, the forecasts for higher education expenditures depend on the forecasts for these three types of inputs. Another important factor is that the relationships which have existed among the variables in the past continue throughout the projection period.

Three sets of projections are presented in this chapter. Each is based on an alternative set of assumptions for the state of the economy, specifically, a different growth path for either disposable income per capita or the revenues of state and local governments per capita. These alternative scenarios for the state of the economy were developed by DRI/McGraw-Hill (DRI). The middle alternative projections are based on the assumption that the economy continues to grow at a steady rate (disposable income per capita increases each year at a rate between 1.0 and 2.3 percent and the revenues of state and local governments per capita increase at rates between 1.7 percent and 4.8 percent.) Two alternative sets of projections were developed to demonstrate the impact of various economic scenarios. In the low alternative, the economy grows at a lower rate than in middle alternative set of projections. The growth rate of disposable income per capita varies between 0.2 and 2.8 percent and that for the revenues of state and local governments per capita varies between 1.5 and 5.1 percent. In the high alternative, the economy enters a period of rapid growth and disposable income grows at rates between 1.2 and 2.4 percent and the revenues of state and local governments per capita grow at rates between 2.1 and 5.0 percent.

The three alternative sets of projections are also based on alternative projections for the inflation rate. The projections for the inflation rate are also from DRI. For the forecast period, they range from 3.4 percent to 4.5 percent for the middle alternative, 3.1 percent to 6.4 percent for the low alternative, and 2.9 percent to 3.9 percent for the high alternative. The projections of the enrollment are those for the middle alternative projections for full-time-equivalent enrollment presented in chapter 2.

Due to the short time series of consistent data, only one set of projections was produced for private 2-year institutions. This was included in each of the alternative projections. The set of projections for private 2-year institutions is not examined separately.

All of the alternative projections indicate an increase in current-fund expenditures throughout the remainder of the century. In the middle alternative projection, current-fund expenditures are projected to reach $208.1 billion in 2002–2003. This is a 46.5 percent increase from 1989–90, the last year for which there are actual data, and a 38.2 percent increase over the projected value for 1991–92. In the low alternative projection, current-fund expenditures are projected to increase to $206.3 billion. In the high alternative projection, the figure for 2002–2003 is $210.6 billion.

A similar pattern is seen for educational and general expenditures. In the middle alternative projection, educational and general expenditures are projected to be $158.7 billion in 2002–2003, a 42.5 percent increase from 1989–90. In the low alternative projection, educational and general expenditures are projected to increase to $157.0 billion. In the high alternative projection, the figure for 2002–2003 is $161.1 billion.

Public 4-Year Institutions

There are only small differences in the trends among the various sectors of higher education. In public 4-year institutions, current-fund expenditures are projected to reach $110.7 billion in the middle alternative projection in 2002–2003 (table 40). This is a 48 percent increase from 1989–90 to 2002–2003 and a 39 percent increase from the projected value for 1991–92. In the low alternative projection, the value for 2002–2003 is $110.1 billion and in the high alternative projection, it is $111.5 billion.

Since full-time-equivalent (FTE) enrollment is projected to increase 24.1 from 1989–90 to 2002–2003, the rate of increase for expenditures is lower on a per student basis. In the middle alternative projection, a 23.1 percent increase is projected for the period from 1989–90 to 2002–2003 compared with 22.6 percent for the low alternative projection and 24.1 percent for the high alternative projection. The most rapid increases are projected to occur from 1992–93 to 1995–96, when the slowest growth in FTE enrollments is projected.

Public 2-Year Institutions

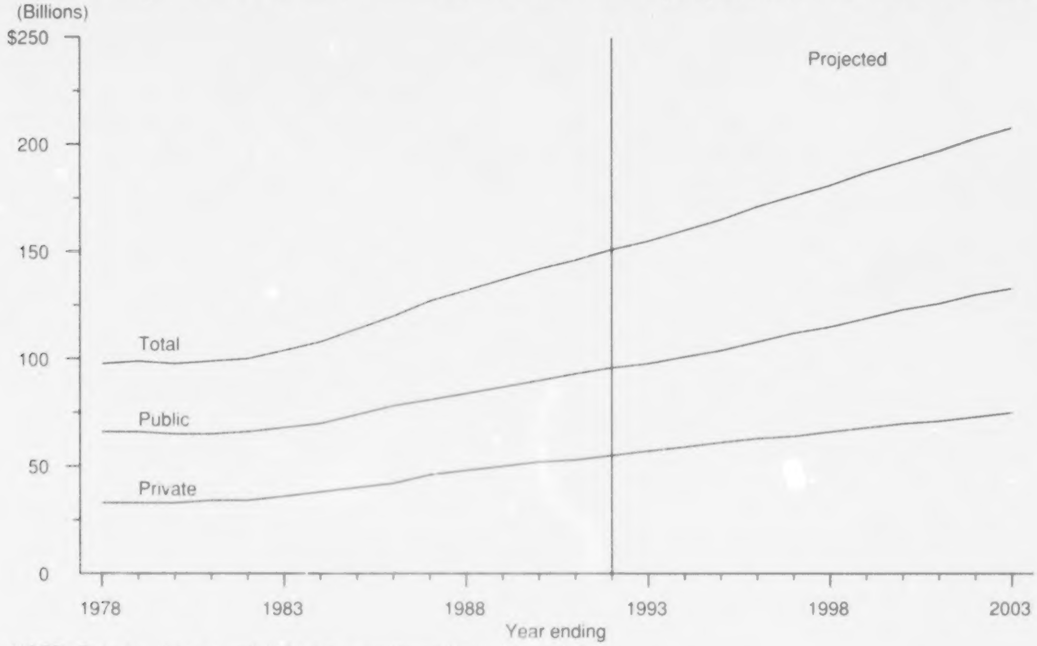
Expenditures are also seen as increasing in public 2-year institutions. For instance, in the middle alternative projection, current-fund expenditures are projected to reach $22.7 billion in 2002–2003 and expenditures per student are projected to increase to $7,050. When the low alternative projection is used, with its lower growth path for revenues of state and local governments per capita, lower values for current expenditure are found, and when the high alternative projection is used, higher values are found. The most rapid increases for expenditures per student are projected to occur from 1993–94 to 1994–95, when the slowest growth in FTE enrollments is projected.

Private 4-Year Institutions

The trends for private 4-year institutions exhibit the same patterns as other types of institutions. Total current-fund expenditures are seen as increasing each year. In the middle alternative projection, from 1989–90 to 2002–2003, they are projected to increase 45.7 percent. Current-fund expenditures per student are projected to increase 20.7 percent during the same time. The most rapid growth for expenditures per student is projected to occur from 1992–93 to 1994–95, when FTE enrollment is projected to grow at rates of less than 1 percent a year.

Figure 58

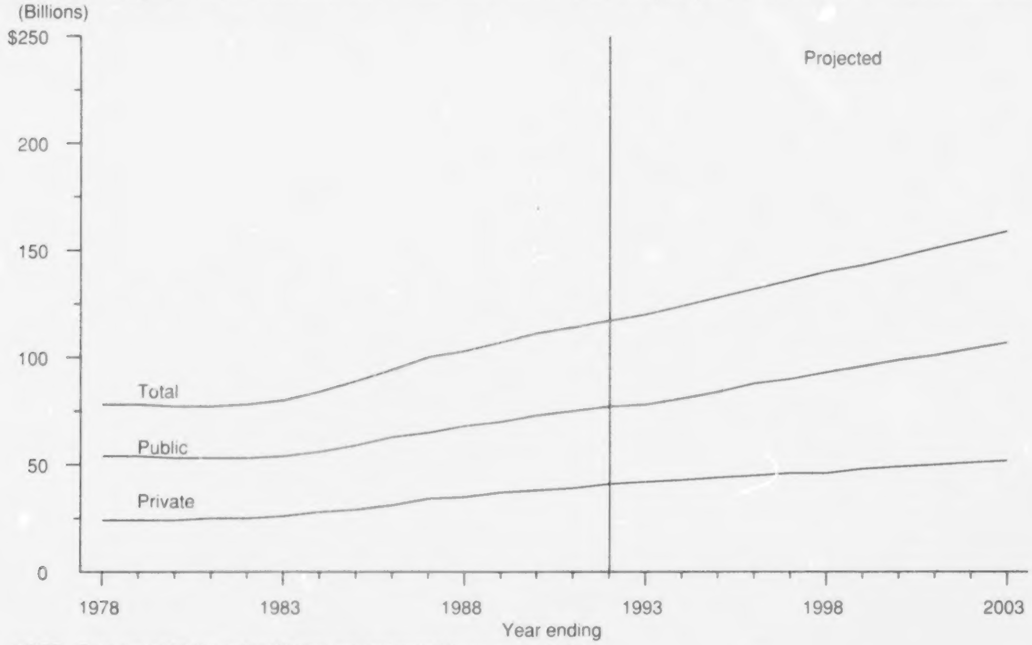
Current-fund expenditures (in constant 1990-91 dollars) of public and private institutions of higher education, with middle alternative projections: 1977-78 to 2002-2003



NOTE: Data for 1990-91 and 1991-92 are estimated by using past data.

Figure 59

Educational and general expenditures (in constant 1990-91 dollars) of public and private institutions of higher education, with middle alternative projections: 1977-78 to 2002-2003



NOTE: Data for 1990-91 and 1991-92 are estimated by using past data.

Table 37.—Current-fund expenditures of public and private institutions of higher education, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Constant 1990–91 dollars[1] (in billions)			Current dollars (in billions)		
	Total	Public	Private	Total	Public	Private
1978	$98.3	$65.7	$32.6	$46.0	$30.7	$15.2
1979	99.2	66.0	33.2	50.7	33.7	17.0
1980	98.3	65.2	33.1	56.9	37.8	19.1
1981	99.1	65.4	33.7	64.1	42.3	21.8
1982	100.1	65.8	34.3	70.3	46.2	24.1
1983	103.7	67.7	36.0	75.9	49.6	26.4
1984	107.9	69.9	38.1	82.0	53.1	28.9
1985	113.9	73.9	40.1	90.0	58.3	31.6
1986	120.1	77.8	42.3	97.5	63.2	34.3
1987	127.3	81.4	45.9	105.8	67.7	38.1
1988	131.6	84.0	47.6	113.8	72.6	41.1
1989	136.9	87.2	49.6	123.9	78.9	44.9
1990	142.0	90.5	51.6	134.7	85.8	48.9
1991[2]	146.2	93.3	52.9	146.2	93.3	52.9
1992[2]	150.6	95.7	54.9	155.4	98.8	56.6
Middle alternative projections						
1993	154.6	97.9	56.7	165.2	104.6	60.6
1994	159.9	101.3	58.7	177.1	112.1	65.9
1995	165.2	104.4	60.8	189.3	119.6	69.7
1996	171.1	108.4	62.7	202.7	128.5	74.3
1997	176.2	111.8	64.3	216.5	137.4	79.0
1998	181.2	115.2	66.0	—	—	—
1999	186.7	118.8	67.8	—	—	—
2000	192.2	122.6	69.5	—	—	—
2001	197.4	126.2	71.2	—	—	—
2002	202.7	129.8	73.0	—	—	—
2003	208.1	133.3	74.8	—	—	—
Low alternative projections						
1993	154.3	97.7	56.5	164.6	104.3	60.3
1994	159.4	100.8	58.6	175.7	111.1	64.6
1995	164.9	104.0	60.9	187.4	118.2	69.3
1996	170.4	108.0	62.4	201.2	127.5	73.7
1997	174.9	111.2	63.7	217.0	138.0	79.0
1998	179.8	114.5	65.3	—	—	—
1999	185.2	118.1	67.1	—	—	—
2000	190.6	121.9	68.7	—	—	—
2001	195.8	125.4	70.4	—	—	—
2002	201.1	128.9	72.2	—	—	—
2003	206.3	132.3	74.0	—	—	—
High alternative projections						
1993	154.6	97.9	56.7	165.3	104.6	60.7
1994	160.2	101.5	58.7	177.9	112.8	65.1
1995	165.5	104.7	60.8	190.7	120.7	70.0
1996	171.6	108.8	62.9	203.6	129.0	74.6
1997	177.0	112.3	64.7	216.2	137.2	79.1
1998	182.4	115.8	66.5	—	—	—
1999	188.0	119.6	68.4	—	—	—
2000	193.8	123.6	70.2	—	—	—
2001	199.3	127.4	71.9	—	—	—
2002	204.9	131.2	73.7	—	—	—
2003	210.6	135.0	75.7	—	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 38.—Educational and general expenditures of public and private institutions of higher education, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Constant 1990–91 dollars[1] (in billions)			Current dollars (in billions)		
	Total	Public	Private	Total	Public	Private
1978	$77.6	$53.8	$23.8	$36.3	$25.1	$11.1
1979	77.9	53.8	24.1	39.8	27.5	12.3
1980	76.9	52.9	24.0	44.5	30.6	13.9
1981	77.5	52.9	24.6	50.1	34.2	15.9
1982	78.1	52.9	25.2	54.8	37.2	17.7
1983	80.5	54.2	26.2	58.9	39.7	19.2
1984	83.9	56.1	27.8	63.7	42.6	21.1
1985	88.8	59.4	29.4	70.1	46.9	23.2
1986	93.7	62.6	31.1	76.1	50.9	25.3
1987	99.9	65.4	34.4	83.0	54.4	28.6
1988	103.1	67.8	35.3	89.2	58.6	30.5
1989	107.0	70.1	36.9	96.8	63.4	33.4
1990	111.4	73.0	38.4	105.6	69.2	36.4
1991[2]	114.1	75.1	39.0	114.1	75.1	39.0
1992[2]	117.2	76.6	40.6	121.0	79.1	41.9
Middle alternative projections						
1993	120.0	78.5	41.5	128.2	83.8	44.4
1994	124.0	81.3	42.7	137.3	90.0	47.2
1995	127.9	84.3	43.6	146.6	96.6	50.0
1996	132.3	87.6	44.7	156.7	103.7	53.0
1997	135.9	90.4	45.5	167.0	111.1	55.9
1998	139.5	93.0	46.5	—	—	—
1999	143.5	95.9	47.6	—	—	—
2000	147.4	98.7	48.7	—	—	—
2001	151.1	101.5	49.6	—	—	—
2002	154.9	104.2	50.7	—	—	—
2003	158.7	107.0	51.7	—	—	—
Low alternative projections						
1993	119.6	78.3	41.3	127.7	83.6	44.1
1994	123.4	80.9	42.6	136.0	89.1	46.9
1995	127.6	83.9	43.7	145.1	95.4	49.7
1996	131.6	87.2	44.4	155.5	103.0	52.5
1997	134.8	89.9	44.9	167.2	111.5	55.7
1998	138.2	92.5	45.8	—	—	—
1999	142.1	95.2	46.8	—	—	—
2000	146.0	98.1	47.9	—	—	—
2001	149.6	100.8	48.8	—	—	—
2002	153.3	103.5	49.9	—	—	—
2003	157.0	106.1	50.9	—	—	—
High alternative projections						
1993	120.0	78.4	41.6	128.3	83.8	44.5
1994	124.2	81.6	42.7	138.0	90.6	47.4
1995	128.2	84.6	43.6	147.7	97.5	50.2
1996	132.8	87.8	44.9	157.5	104.2	53.3
1997	136.7	90.8	45.9	167.0	110.9	56.1
1998	140.6	93.6	47.0	—	—	—
1999	144.7	96.5	48.2	—	—	—
2000	148.9	99.5	49.4	—	—	—
2001	152.9	102.5	50.4	—	—	—
2002	156.9	105.5	51.4	—	—	—
2003	161.1	108.5	52.6	—	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 39.—Current-fund expenditures and current-fund expenditures per full-time equivalent (FTE) student of public 4-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars[1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	4,039	$53.5	$13,248	$25.0	$6,193
1979	3,996	54.0	13,509	27.6	6,907
1980	4,059	53.5	13,181	31.0	7,632
1981	4,158	53.7	12,903	34.7	8,339
1982	4,209	53.9	12,813	37.9	9,003
1983	4,221	55.5	13,140	40.6	9,623
1984	4,266	57.4	13,453	43.6	10,218
1985	4,238	60.8	14,353	48.0	11,330
1986	4,240	64.2	15,152	52.2	12,309
1987	4,295	67.4	15,696	56.0	13,038
1988	4,396	69.5	15,820	60.1	13,681
1989	4,506	72.2	16,029	65.3	14,504
1990	4,620	74.8	16,181	70.9	15,339
1991[2]	4,707	77.2	16,401	77.2	16,401
1992[2]	4,876	79.6	16,328	82.2	16,855
			Middle alternative projections		
1993	4,896	81.7	16,680	87.3	17,822
1994	4,928	84.4	17,117	93.4	18,953
1995	4,868	86.8	17,823	99.4	20,423
1996	4,951	89.9	18,155	106.5	21,507
1997	5,000	92.6	18,527	113.8	22,764
1998	5,074	95.4	18,808	—	—
1999	5,177	98.5	19,019	—	—
2000	5,294	101.6	19,194	—	—
2001	5,385	104.6	19,426	—	—
2002	5,478	107.7	19,653	—	—
2003	5,554	110.7	19,925	—	—
			Low alternative projections		
1993	4,896	81.6	16,662	87.1	17,781
1994	4,928	84.1	17,062	92.7	18,803
1995	4,868	86.5	17,777	98.4	20,207
1996	4,951	89.6	18,105	105.9	21,388
1997	5,000	92.3	18,463	114.5	22,906
1998	5,074	95.1	18,739	—	—
1999	5,177	98.1	18,946	—	—
2000	5,294	101.2	19,118	—	—
2001	5,385	104.2	19,352	—	—
2002	5,478	107.2	19,570	—	—
2003	5,554	110.1	19,830	—	—
			High alternative projections		
1993	4,896	81.6	16,675	87.3	17,826
1994	4,928	84.5	17,146	93.8	19,039
1995	4,868	86.9	17,860	100.2	20,575
1996	4,951	90.1	18,188	106.8	21,581
1997	5,000	92.9	18,575	113.4	22,688
1998	5,074	95.8	18,873	—	—
1999	5,177	98.8	19,092	—	—
2000	5,294	102.1	19,286	—	—
2001	5,385	105.2	19,544	—	—
2002	5,478	108.4	19,789	—	—
2003	5,554	111.5	20,083	—	—

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[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 40.—Educational and general expenditures and educational and general expenditures per full-time equivalent (FTE) student of public 4-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars [1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	4,039	$42.3	$10,481	$19.8	$4,899
1979	3,996	42.5	10,640	21.7	5,440
1980	4,059	42.0	10,336	24.3	5,985
1981	4,158	41.9	10,080	27.1	6,515
1982	4,209	41.8	9,942	29.4	6,986
1983	4,221	42.8	10,151	31.4	7,434
1984	4,266	44.5	10,423	33.8	7,917
1985	4,238	47.2	11,148	37.3	8,800
1986	4,240	50.0	11,792	40.6	9,580
1987	4,295	52.4	12,196	43.5	10,130
1988	4,396	54.3	12,357	47.0	10,686
1989	4,506	56.1	12,455	50.8	11,270
1990	4,620	58.3	12,624	55.3	11,967
1991 [2]	4,707	60.1	12,777	60.1	12,777
1992 [2]	4,876	61.6	12,643	63.6	13,050
		Middle alternative projections			
1993	4,896	63.4	12,947	67.7	13,834
1994	4,928	65.6	13,306	72.6	14,734
1995	4,868	67.9	13,942	77.8	15,975
1996	4,951	70.2	14,181	83.2	16,800
1997	5,000	72.4	14,478	88.9	17,789
1998	5,074	74.5	14,686	—	—
1999	5,177	76.7	14,819	—	—
2000	5,294	79.0	14,913	—	—
2001	5,385	81.2	15,071	—	—
2002	5,478	83.4	15,224	—	—
2003	5,554	85.7	15,424	—	—
		Low alternative projections			
1993	4,896	63.3	12,934	67.6	13,802
1994	4,928	65.4	13,265	72.0	14,619
1995	4,868	67.7	13,906	77.0	15,808
1996	4,951	70.0	14,143	82.7	16,708
1997	5,000	72.1	14,430	89.5	17,902
1998	5,074	74.3	14,634	—	—
1999	5,177	76.4	14,764	—	—
2000	5,294	78.6	14,856	—	—
2001	5,385	80.9	15,015	—	—
2002	5,478	83.1	15,161	—	—
2003	5,554	85.3	15,352	—	—
		High alternative projections			
1993	4,896	63.4	12,944	67.7	13,837
1994	4,928	65.7	13,328	72.9	14,800
1995	4,868	68.0	13,969	78.3	16,093
1996	4,951	70.3	14,206	83.5	16,856
1997	5,000	72.6	14,514	88.6	17,728
1998	5,074	74.8	14,736	—	—
1999	5,177	77.0	14,874	—	—
2000	5,294	79.3	14,983	—	—
2001	5,385	81.6	15,160	—	—
2002	5,478	84.0	15,326	—	—
2003	5,554	86.3	15,543	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 41.—Current-fund expenditures and current-fund expenditures per full-time equivalent (FTE) student of public 2-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars[1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	2,357	$12.2	$5,183	$5.7	$2,423
1979	2,283	12.0	5,254	6.1	2,686
1980	2,333	11.7	5,025	6.8	2,910
1981	2,484	11.8	4,735	7.6	3,061
1982	2,573	11.9	4,608	8.3	3,238
1983	2,630	12.2	4,651	9.0	3,406
1984	2,616	12.5	4,781	9.5	3,631
1985	2,447	13.0	5,331	10.3	4,209
1986	2,428	13.6	5,582	11.0	4,534
1987	2,483	14.0	5,650	11.7	4,693
1988	2,542	14.5	5,689	12.5	4,919
1989	2,592	15.0	5,798	13.6	5,247
1990	2,751	15.7	5,716	14.9	5,418
1991[2]	2,791	16.1	5,769	16.1	5,769
1992[2]	2,826	16.1	5,696	16.6	5,880
Middle alternative projections					
1993	2,840	16.2	5,716	17.3	6,107
1994	2,871	16.9	5,896	18.7	6,528
1995	2,854	17.6	6,176	20.2	7,077
1996	2,914	18.6	6,367	22.0	7,542
1997	2,953	19.2	6,506	23.6	7,994
1998	2,992	19.8	6,603	—	—
1999	3,046	20.4	6,692	—	—
2000	3,103	21.0	6,776	—	—
2001	3,143	21.6	6,864	—	—
2002	3,180	22.1	6,954	—	—
2003	3,213	22.7	7,050	—	—
Low alternative projections					
1993	2,840	16.2	5,688	17.2	6,070
1994	2,871	16.7	5,812	18.4	6,405
1995	2,854	17.4	6,105	19.8	6,940
1996	2,914	18.3	6,290	21.7	7,431
1997	2,953	18.9	6,408	23.5	7,951
1998	2,992	19.4	6,497	—	—
1999	3,046	20.0	6,579	—	—
2000	3,103	20.7	6,661	—	—
2001	3,143	21.2	6,750	—	—
2002	3,180	21.7	6,826	—	—
2003	3,213	22.2	6,905	—	—
High alternative projections					
1993	2,840	16.2	5,709	17.3	6,103
1994	2,871	17.1	5,940	18.9	6,596
1995	2,854	17.8	6,233	20.5	7,180
1996	2,914	18.7	6,418	22.2	7,615
1997	2,953	19.4	6,580	23.7	8,037
1998	2,992	20.1	6,703	—	—
1999	3,046	20.7	6,804	—	—
2000	3,103	21.5	6,917	—	—
2001	3,143	22.1	7,044	—	—
2002	3,180	22.8	7,162	—	—
2003	3,213	23.4	7,291	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 42.—Educational and general expenditures and educational and general expenditures per full-time equivalent (FTE) student of public 2-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars[1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	2,357	$11.5	$4,864	$5.4	$2,274
1979	2,283	11.2	4,927	5.8	2,519
1980	2,333	10.9	4,689	6.3	2,715
1981	2,484	11.0	4,411	7.1	2,851
1982	2,573	11.1	4,299	7.8	3,021
1983	2,630	11.4	4,326	8.3	3,168
1984	2,616	11.6	4,440	8.8	3,372
1985	2,447	12.1	4,959	9.6	3,915
1986	2,428	12.6	5,201	10.3	4,225
1987	2,483	13.1	5,260	10.8	4,369
1988	2,542	13.5	5,307	11.7	4,590
1989	2,592	14.0	5,401	12.7	4,888
1990	2,751	14.6	5,321	13.9	5,044
1991[2]	2,791	15.0	5,373	15.0	5,373
1992[2]	2,826	15.0	5,293	15.4	5,464
		Middle alternative projections			
1993	2,840	15.1	5,305	16.1	5,668
1994	2,871	15.7	5,485	17.4	6,074
1995	2,854	16.4	5,758	18.8	6,598
1996	2,914	17.4	5,956	20.6	7,056
1997	2,953	18.0	6,097	22.1	7,492
1998	2,992	18.5	6,194	—	—
1999	3,046	19.1	6,285	—	—
2000	3,103	19.8	6,373	—	—
2001	3,143	20.3	6,461	—	—
2002	3,180	20.8	6,550	—	—
2003	3,213	21.3	6,644	—	—
		Low alternative projections			
1993	2,840	15.0	5,276	16.0	5,630
1994	2,871	15.5	5,399	17.1	5,950
1995	2,854	16.2	5,685	18.4	6,462
1996	2,914	17.1	5,877	20.2	6,943
1997	2,953	17.7	5,996	22.0	7,439
1998	2,992	18.2	6,084	—	—
1999	3,046	18.8	6,169	—	—
2000	3,103	19.4	6,254	—	—
2001	3,143	19.9	6,343	—	—
2002	3,180	20.4	6,418	—	—
2003	3,213	20.9	6,494	—	—
		High alternative projections			
1993	2,840	15.0	5,297	16.1	5,663
1994	2,871	15.9	5,531	17.6	6,142
1995	2,854	16.6	5,816	19.1	6,701
1996	2,914	17.5	6,009	20.8	7,130
1997	2,953	18.2	6,173	22.3	7,540
1998	2,992	18.8	6,297	—	—
1999	3,046	19.5	6,401	—	—
2000	3,103	20.2	6,519	—	—
2001	3,143	20.9	6,646	—	—
2002	3,180	21.5	6,764	—	—
2003	3,213	22.1	6,893	—	—

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[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 43.—Current-fund expenditures and current-fund expenditures per full-time equivalent (FTE) student of private 4-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars[1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	1,896	$31.8	$16,795	$14.9	$7,851
1979	1,936	32.4	16,731	16.6	8,554
1980	1,957	32.3	16,489	18.7	9,547
1981	2,003	32.7	16,346	21.2	10,565
1982	2,041	33.4	16,344	23.4	11,485
1983	2,028	35.0	17,250	25.6	12,633
1984	2,059	37.0	17,959	28.1	13,641
1985	2,055	38.9	18,941	30.7	14,952
1986	2,055	41.1	19,996	33.4	16,244
1987	2,065	44.5	21,562	37.0	17,910
1988	2,091	46.3	22,127	40.0	19,134
1989	2,160	48.4	22,408	43.8	20,276
1990	2,195	50.3	22,931	47.7	21,737
1991[2]	2,225	51.6	23,195	51.6	23,195
1992[2]	2,328	53.6	23,013	55.3	23,755
			Middle alternative projections		
1993	2,344	55.4	23,638	59.2	25,256
1994	2,364	57.4	24,263	63.5	26,866
1995	2,338	59.5	25,456	68.2	29,170
1996	2,376	61.4	25,823	72.7	30,592
1997	2,398	63.0	26,258	77.4	32,263
1998	2,431	64.7	26,600	—	—
1999	2,477	66.4	26,813	—	—
2000	2,530	68.1	26,917	—	—
2001	2,569	69.8	27,157	—	—
2002	2,611	71.5	27,382	—	—
2003	2,648	73.3	27,687	—	—
			Low alternative projections		
1993	2,344	55.3	23,572	59.0	25,155
1994	2,364	57.3	24,253	63.2	26,728
1995	2,338	59.6	25,492	67.7	28,978
1996	2,376	61.1	25,694	72.1	30,353
1997	2,398	62.3	26,000	77.4	32,256
1998	2,431	63.9	26,304	—	—
1999	2,477	65.6	26,500	—	—
2000	2,530	67.3	26,599	—	—
2001	2,569	69.0	26,839	—	—
2002	2,611	70.7	27,069	—	—
2003	2,648	72.5	27,362	—	—
			High alternative projections		
1993	2,344	55.5	23,658	59.3	25,290
1994	2,364	57.4	24,263	63.7	26,942
1995	2,338	59.4	25,423	68.5	29,288
1996	2,376	61.5	25,895	73.0	30,725
1997	2,398	63.4	26,427	77.4	32,278
1998	2,431	65.2	26,808	—	—
1999	2,477	67.0	27,056	—	—
2000	2,530	68.8	27,186	—	—
2001	2,569	70.5	27,436	—	—
2002	2,611	72.3	27,672	—	—
2003	2,648	74.2	28,003	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Table 44.—Educational and general expenditures and educational and general expenditures per full-time equivalent (FTE) student of private 4-year institutions, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	FTE (in thousands)	Current-fund expenditures			
		Constant 1990–91 dollars[1]		Current dollars	
		Total (in billions)	Per student in FTE	Total (in billions)	Per student in FTE
1978	1,896	$23.1	$12,193	$10.8	$5,700
1979	1,936	23.4	12,109	12.0	6,191
1980	1,957	23.4	11,940	13.5	6,913
1981	2,003	23.8	11,875	15.4	7,675
1982	2,041	24.3	11,916	17.1	8,373
1983	2,028	25.4	12,512	18.6	9,163
1984	2,059	26.9	13,066	20.4	9,924
1985	2,055	28.4	13,804	22.4	10,897
1986	2,055	30.0	14,616	24.4	11,873
1987	2,065	33.2	16,073	27.6	13,351
1988	2,091	34.1	16,307	29.5	14,102
1989	2,160	35.8	16,553	32.3	14,978
1990	2,195	37.3	16,994	35.4	16,110
1991 [2]	2,225	37.8	16,985	37.8	16,985
1992 [2]	2,328	39.5	16,948	40.7	17,495
Middle alternative projections					
1993	2,344	40.4	17,225	43.1	18,404
1994	2,364	41.5	17,543	45.9	19,425
1995	2,338	42.4	18,148	48.6	20,795
1996	2,376	43.5	18,324	51.6	21,708
1997	2,398	44.3	18,476	54.4	22,701
1998	2,431	45.2	18,608	—	—
1999	2,477	46.3	18,700	—	—
2000	2,530	47.4	18,730	—	—
2001	2,569	48.3	18,808	—	—
2002	2,611	49.3	18,889	—	—
2003	2,648	50.4	19,018	—	—
Low alternative projections					
1993	2,344	40.2	17,136	42.9	18,286
1994	2,364	41.4	17,509	45.6	19,296
1995	2,338	42.5	18,171	48.3	20,656
1996	2,376	43.2	18,199	51.1	21,498
1997	2,398	43.7	18,226	54.2	22,611
1998	2,431	44.5	18,320	—	—
1999	2,477	45.6	18,395	—	—
2000	2,530	46.6	18,421	—	—
2001	2,569	47.5	18,498	—	—
2002	2,611	48.5	18,583	—	—
2003	2,648	49.5	18,700	—	—
High alternative projections					
1993	2,344	40.4	17,253	43.2	18,443
1994	2,364	41.5	17,556	46.1	19,495
1995	2,338	42.4	18,121	48.8	20,876
1996	2,376	43.7	18,395	51.9	21,826
1997	2,398	44.7	18,643	54.6	22,771
1998	2,431	45.7	18,816	—	—
1999	2,477	46.9	18,943	—	—
2000	2,530	48.1	19,001	—	—
2001	2,569	49.0	19,092	—	—
2002	2,611	50.1	19,187	—	—
2003	2,648	51.2	19,347	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1997 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared June 1992.)

Technical Appendixes

Appendix A

Projection Methodology

The general procedure for *Projections* was to express the variable to be projected as a percent of a "base" variable. These percents were then projected and applied to projections of the "base" variable. For example, the number of 18-year-old college students was expressed as a percent of the 18-year-old population for each year from 1972 through 1990. This percent was then projected through the year 2003 and applied to projections of the 18-year-old population from the Bureau of the Census.

Enrollment projections are based primarily on population projections. Projections of classroom teachers, high school graduates, earned degrees conferred, and expenditures are based primarily on enrollment projections.

Single exponential smoothing, double exponential smoothing, and multiple linear regression are the three major projection techniques used in this publication. Single exponential smoothing is used when the historical data have a basically horizontal pattern. On the other hand, double exponential smoothing is used when the time series is expected to change linearly with time. In general, exponential smoothing places more weight on recent observations than on earlier ones. The weights for observations decrease exponentially as one moves further into the past. As a result, the older the data, the less their influence on projections. The rate at which the weights of older observations decrease is determined by the smoothing constant selected.

$$P = \alpha X_t + \alpha(1-\alpha)X_{t-1} + \alpha(1-\alpha)^2X_{t-2} + \alpha(1-\alpha)^3X_{t-3} + \ldots$$

Where:

P = projected constant

α = smoothing constant ($0 < \alpha < 1$)

X_t = observation for time t

This equation illustrates that the projection is a weighted average based on exponentially decreasing weights. For a high smoothing constant, weights for earlier observations decrease rapidly. For a low smoothing constant, decreases are more moderate. Projections of enrollments and public high school graduates are based on a range of smoothing constants (α = 0.2 to 0.9).

In general, the projections in this publication are based on fairly high smoothing constants. The farther apart the observations are spaced in time, the more likely are changes in the underlying social, political, and economic structure. Since the observations are on an annual basis, major shifts in the underlying process are more likely in the time span of just a few observations than if the observations were available on a monthly or weekly basis. As a result, the underlying process tends to be unstable from one observation to the next. Another reason for using high smoothing constants for some time series is that most of the observations are fairly accurate, because most observations are population values rather than sample estimates. Therefore, large shifts tend to indicate actual changes in the process rather than noise in the data.

Multiple linear regression was also used in making projections, primarily in the areas of teachers, earned degrees, and expenditures. This technique was used when it was believed that a strong causal relationship existed between the variable being projected (the dependent variable) and independent causal variables. However, this technique was used only when accurate data and reliable projections of the independent variables were available.

The functional form primarily used was the multiplicative model. When used with two independent variables, this model takes the form:

$$Y = aX_1^{b_1}X_2^{b_2}$$

This equation can easily be transformed into the linear form by taking the natural log(ln) of both sides of the equation:

$$\ln Y = \ln(a) + b_1 \ln X_1 + b_2 \ln X_2$$

The multiplicative model has a number of advantages; it is a reasonable way to represent human behavior. Constant elasticities are assumed; this says that a 1 percent change in ln X will lead to a given percent change in ln Y. This percent change is equal to b_1. And it lends itself easily to "a priori" analysis because the researcher does not have to worry about units of measurement when specifying relationships. In fact, the multiplicative model is considered the standard in economic problems. For additional information, see *Long-Range Forecasting: From Crystal Ball to Computer* by J. Scott Armstrong (John Wiley and Sons, 1978, pp. 180–181).

Caveats

Because projections are subject to errors from many sources, alternative projections are shown for some statistical series. These alternatives are not statistical confidence intervals, but instead represent judgments made by the authors as to reasonable upper and lower bounds for each projected series. Alternative projections were developed for higher education enrollment, classroom teachers, earned degrees conferred, and expenditures in public elementary and secondary schools and institutions of higher education.

Assumptions

All projections are based on underlying assumptions, and these assumptions determine projection results to a large extent. It is important that users of projections understand the assumptions to determine the acceptability of projected time series for their purposes. In each chapter, there are descriptions of the primary assumptions upon which the projections of time series are based.

For most projections, low, middle, and high alternatives are shown. These alternatives reveal the level of uncertainty involved in making projections, and they also point out the sensitivity of projections to the assumptions on which they are based.

Many of the projections in this publication are demographically based. Bureau of the Census middle series projections of the population by age were used. These middle series population projections are based on the 1990 census. The future fertility rate assumption, which determines projections of the number of births, is the key assumption in making population projections. The middle series population projections assume an ultimate complete cohort fertility rate of 2.1 births per woman by the year 2050 and a net immigration of 880,000 per year. This assumption plays a major role in determining population projections for the age groups enrolled in nursery school, kindergarten, and elementary grades. The effects of the fertility rate assumption are more pronounced toward the end of the projection period.

For enrollments in secondary grades and college, the fertility assumption is of no consequence, since all students enrolled at these levels were already born when the population projections were made. For projections of enrollments in elementary schools, only middle series population projections were considered. Projections of high school graduates are based on projections of the number of high school graduates expressed as a percent of grade 12 enrollment. Projections of associate, bachelor's, master's, doctor's, and first-professional degrees are based on projections of college-age populations and higher education enrollment, by sex, attendance status and level enrolled by student, and by type of institution. Many of the projections of classroom teachers and expenditures of public elementary and secondary schools and institutions of higher education are based on projections of disposable income per capita and various revenue measures of state and local governments. Disposable income per capita projections were obtained from DRI/McGraw-Hill. Therefore, the many assumptions made in projecting disposable income per capita also apply to those projections based on projections of disposable income per capita.

A1. Enrollment

Enrollment projections were based on projected enrollment rates, by age and sex, which were applied to population projections by age and sex developed by the Bureau of the Census. These enrollment rates were projected by taking into account the most recent trends, as well as the effects of economic conditions and demographic changes on a person's decision to enter college. The enrollment rates were then used in an interactive forecasting model (IFMOD), which consists of age-specific rates by sex and by enrollment levels (nursery school through college). The model has 5 stages. See figure 60.

The first stage of IFMOD is an age-specific enrollment model in which enrollment rates are projected and applied to age-specific population projections. This stage, which is used separately for each sex, includes the following categories: (1) nursery and kindergarten, (2) elementary grades 1–8, (3) secondary grades 9–12, (4) full-time college enrollment, and (5) part-time college enrollment. For each of these enrollment categories, enrollment rates were projected by individual ages 3 through 24 and for the age groups 25 to 29, 30 to 34, and 35 years and over.

Enrollments by age and age groups from the Bureau of the Census were adjusted to NCES totals to compute enrollment rates for 1972 through 1990. Different assumptions were made to produce low, middle, and high alternative projections of enrollment rates to the year 2003.

Elementary Grades 1–8

Projections of elementary enrollment rates were considered for ages 5 through 21. Elementary enrollments are negligible for the remaining ages. Because most elementary enrollment rates have been fluctuating at levels close to 100 percent from 1972 to 1990, alternative enrollment rate projections were not computed. The only set of enrollment rate projections computed was based on the assumption that rates will remain constant through the year 2003 (table A1.1). Several of the rates in table A1.1 exceed 100 percent, as a result of several factors. The enrollment data by age were prorated to agree with NCES totals. The Bureau of the Census does not revise enrollment estimates by age, but population estimates are revised regularly.

Secondary Grades 9–12

Projections of secondary enrollment rates were considered for ages 12 through 34. Secondary enrollments are negligible for the remaining ages. Secondary enrollment rates have fluctuated within a narrow range from 1972 to 1990. Therefore, alternative enrollment rate projections were not calculated. The only set of projections computed was based on constant enrollment rates (table A1.2).

College Full-Time and Part-Time Enrollment

Projections of full-time and part-time college enrollments were considered only for ages 16 and over. (College enrollment is negligible for earlier ages.) Three alternative projections were made using various assumptions. Table A1.3 shows enrollment rates for 1990 and low, middle, and high alternative projected enrollment rates for 1998 and 2003.

Table A1.4 shows the equations used to project enrollment rates for 18-year-old men enrolled full-time and part-time. Table A1.5 shows the equations used to project enrollment rates for 18-year-old women enrolled full-time and part-time.

Enrollment in Public Elementary and Secondary Schools, by Grade Group and Organizational Level

The third stage of IFMOD projects public enrollment in elementary and secondary schools by grade group and by organizational level. Public enrollments by age were based on enrollment rate projections for nursery and kindergarten, grade 1, elementary ungraded and special, secondary ungraded and special, and postgraduate enrollment. Grade retention rate projections were used for grades 2 through 12. Table A1.6 shows the public school enrollment rates and table A1.7 shows the public grade-retention rates for 1990 and projections for 1998 and 2003. The projected rates in tables A1.6 and A1.7 were used to compute the projections of enrollments in elementary and secondary schools, by grade, shown in table 1.

College Enrollment, by Sex, Attendance Status, and Level Enrolled; and by Type and Control of Institution

The fourth stage of IFMOD projects enrollments in institutions of higher education, by sex, attendance status, and level enrolled by student; and by type and control of institution. For each age group, the percent that enrollment by age, attendance status, level enrolled, and by type of institution was of total enrollment was projected. These projections are shown in tables A1.8 and A1.9, along with actual values for 1990. For all projections, it was assumed that there was no enrollment in 2-year institutions at the postbaccalaureate level (graduate and first-professional).

The projected rates shown in tables A1.8 and A1.9 were then adjusted to agree with the projected age-specific enrollment rates in the first stage of IFMOD. The adjusted rates were then applied to the projected enrollments by age group, sex, and attendance status from the first stage of IFMOD to obtain projections by age group, sex, attendance status, level enrolled, and type of institution.

For each enrollment category—sex, attendance status, level enrolled, and type of institution—the percent that public enrollment was of total enrollment was projected. These projections are shown in table A1.10, along with actual percent for 1990 and projections for 1998 and 2003. The projected rates shown were then applied to the projected enrollments in each enrollment category to obtain projections by control of institution.

For each enrollment category by sex and enrollment level, and by type and control of institution, the percent that graduate enrollment was of postbaccalaureate enrollment was projected. Actual rates for 1990 and projections for 1998 and 2003 are shown in table A1.11. The projected rates in table A1.11 were then applied to projections of postbaccalaureate enrollment to obtain graduate and first-professional enrollment projections by sex and attendance status, and by type and control of institution.

Full-Time-Equivalent Enrollment, by Type and Control of Institution and by Level Enrolled

The fifth stage of IFMOD projects full-time-equivalent enrollment, by type and control of institution and by level enrolled. For each enrollment category by level enrolled and by type and control of institution, the percent that the full-time-equivalent of part-time enrollment was of part-time enrollment was projected. Actual percents for 1990 and projections for 1998 and 2003 are shown in table A1.12.

These projected percents were applied to projections of enrollment by level enrolled and by type and control of institution from the fourth stage of IFMOD. The projections of the full-time-equivalent of part-time enrollment were added to projections of full-time enrollment (from the previous stage) to obtain projections of full-time-equivalent enrollment.

Projection Accuracy

An analysis of projection errors from the past nine editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, 5, and 10 years out for projections of enrollment in grades K–12 were 0.4, 0.5, 1.1, and 2.1 percent, respectively. For the 1-year-out prediction, this means that one would expect the projection to be within 0.4 percent of the actual value, on the average. For projections of enrollment in grades K–8, the MAPEs for lead times of 1, 2, 5, and 10 years were 0.5, 0.8, 1.1, and 3.6 percent, respectively, while those for projections of enrollment in grades 9–12 were 0.6, 0.5, 1.3, and 3.5 percent for the same lead times.

For projections of enrollment in higher education, an analysis of projection errors based on the past six editions of *Projections of Education Statistics* indicates that the MAPEs for lead times of 1, 2, and 5 years were 1.7, 3.4, and 4.1 percent, respectively. For the 1-year-out prediction, this means that one would expect the projection to be within 1.7 percent of the actual value, on the average.

Basic Methodology

The notation and equations that follow describe the basic models used to project public elementary and secondary enrollment.

Public Elementary and Secondary Enrollment

Let:

i = Subscript denoting age

j = Subcript denoting grade

t = Subscript denoting time

K_t = Enrollment at the nursery and kindergarten level

G_{jt} = Enrollment in grade j

G_{1t} = Enrollment in grade 1

E_t = Enrollment in elementary special and ungraded programs

S_t = Enrollment in secondary special and ungraded programs

PG_t = Enrollment in postgraduate programs

P_{it} = Population age i

RK_t = Enrollment rate for nursery and kindergarten

RG_{1t} = Enrollment rate for grade 1

RE_t = Enrollment rate for elementary special and ungraded programs

RS_t = Enrollment rate for secondary special and ungraded programs

RPG_t = Enrollment rate for postgraduate programs

EG_t = Total enrollment in elementary grades (K–8)

SG_t = Total enrollment in secondary grades (9–12)

R_{jt} = Retention rate for grade j: the proportion that enrollment in grade j in year t is of enrollment in grade j–1 in year t–1.

Then:

$$EG_t = K_t + E_t + \sum_{j=1}^{8} GT_{jt}$$

$$SG_t = S_t + PG_t + \sum_{j=9}^{12} GT_{jt}$$

Where:

K_t = $RK_t(P_{5t})$

G_{jt} = $R_{jt}(G_{j-1,\,t-1})$

$$E_t = RE_t \left(\sum_{i=5}^{13} P_{it} \right)$$

G_{1t} = $RG_{1t}(P_{6t})$

$$S_t = RS_t \left(\sum_{i=14}^{17} P_{it} \right)$$

PG_t = $RPG_t(P_{18t})$

Higher Education Enrollment

For institutions of higher education, projections were computed separately by sex and attendance status of student. The notation and equations are:

Let:

i = Subscript denoting age except:

$i = 25$: ages 25–29

$i = 26$: ages 30–34

$i = 27$: ages 35 and over for enrollment (35–44 for population)

t = Subscript denoting year

E_{it} = Enrollment of students age i

P_{it} = Population age i

R_{it} = Enrollment rate for students age i

T_{it} = Total enrollment for particular subset of students: full-time men, full-time women, part-time men, part-time women

Then:

$$T_{it} = \sum_{i=16}^{27} E_{it}$$

Where:

E_{it} = $R_{it}(P_{it})$

Methodological Tables

The tables in this section give the rates used to calculate projections of enrollments, basic assumptions underlying enrollment projections (table A1.13), and methods used to estimate values for which data are not available (table A1.14).

Private School Enrollment

Projections of private school enrollment were derived in the following manner. For 1991, the ratio of private school enrollment to public school enrollment was calculated by grade level. These 1991 ratios were then held constant over the projection period. These ratios were then applied to projections of public school enrollment by grade level to yield projections of private school enrollment. This method assumes that the future pattern in the trend of private school enrollment will be the same as that in public school enrollment. The reader is cautioned that a number of factors could alter the assumptions of constant ratios over the projection period.

Figure 60

General structure and methodology of the Interactive Forecasting Model (IFMOD)

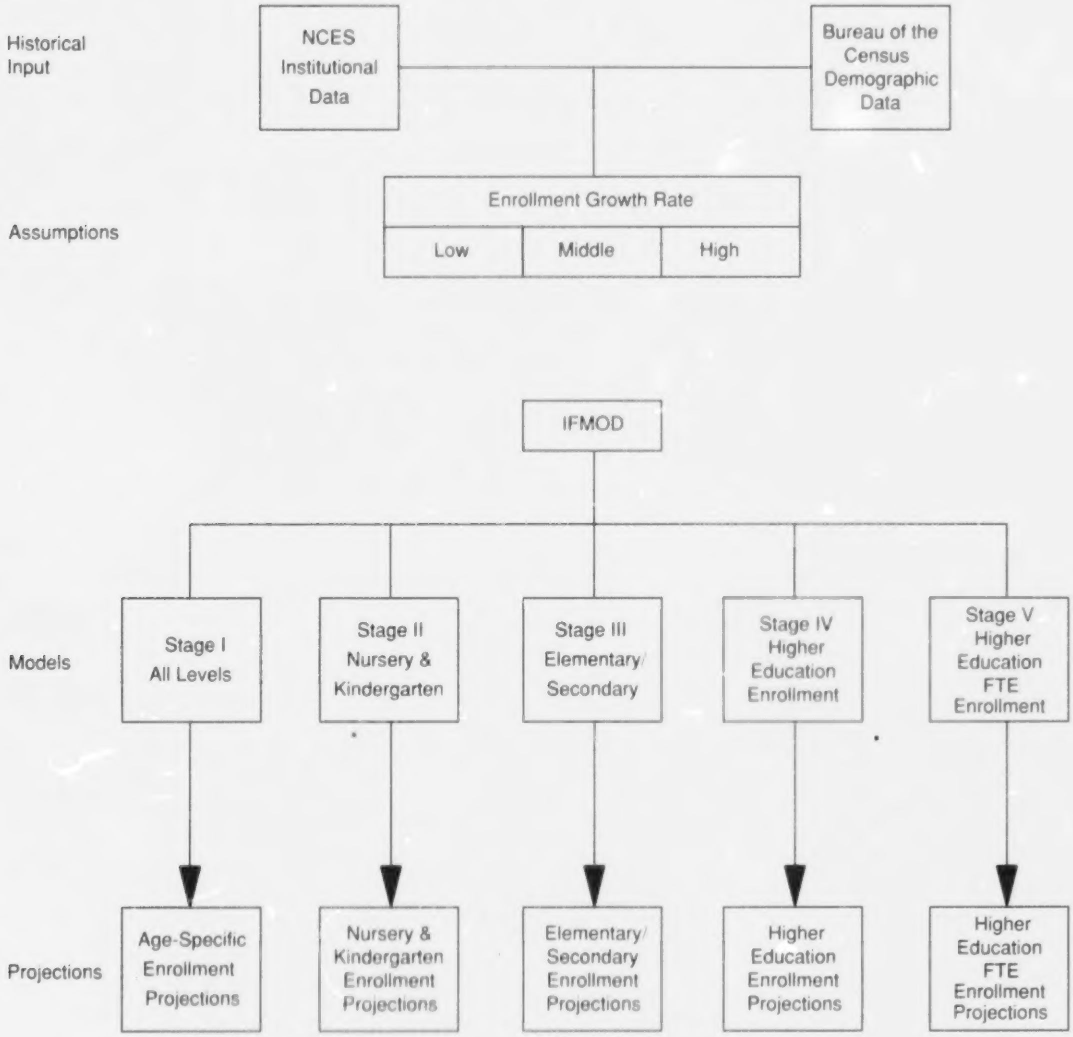
Historical Input
NCES Institutional Data
Bureau of the Census Demographic Data
Assumptions
Enrollment Growth Rate
Low
Middle
High
IFMOD
Models
Stage I All Levels
Stage II Nursery & Kindergarten
Stage III Elementary/Secondary
Stage IV Higher Education Enrollment
Stage V Higher Education FTE Enrollment
Projections
Age-Specific Enrollment Projections
Nursery & Kindergarten Enrollment Projections
Elementary/Secondary Enrollment Projections
Higher Education Enrollment Projections
Higher Education FTE Enrollment Projections

Table A1.1.—Elementary enrollment rates, by age and sex

Age	Boys		Girls	
	1990	1992–2003	1990	1992–2003
5	4.3	4.6	5.1	5.7
6	85.0	83.5	90.2	88.9
7	104.4	102.8	102.9	101.6
8	104.1	103.2	104.3	103.3
9	101.8	101.5	101.0	101.2
10	100.0	100.5	98.7	100.2
11	104.7	103.9	105.4	104.3
12	101.8	101.8	99.2	100.6
13	98.9	97.0	98.5	96.4
14	37.9	37.9	28.5	27.1
15	7.6	7.4	4.0	3.9
16	0.7	0.7	0.0	0.2
17	0.0	0.1	0	0
18	0	0	0	0

Table A1.2.—Secondary enrollment rates, by age and sex

Age	Boys		Girls	
	1990	1992–2003	1990	1992–2003
12	0.2	0.2	0.5	0.5
13	4.6	4.9	7.4	7.1
14	61.5	62.3	71.5	72.2
15	88.7	88.6	90.6	90.9
16	90.8	91.5	94.5	93.2
17	79.5	80.1	78.4	78.8
18	24.9	25.4	18.5	18.2
19	5.6	5.8	4.6	4.0
20	1.1	1.0	1.2	1.1
21	0.9	0.8	1.0	1.0
22	0.5	0.4	0.5	0.4
23	0.3	0.3	0.4	0.3
24	0.8	0.6	0.3	0.3
25–29	0.2	0.2	0.5	0.5
30–34	0.1	0.1	0.2	0.2

Table A1.3.—College enrollment rates, by age, sex, and attendance status, with alternative projections

Age, sex, and attendance status	1990	Low alternative		Middle alternative		High alternative	
		1998	2003	1998	2003	1998	2003
Men							
Full-time:							
16	0.2	0.2	0.2	0.2	0.2	0.2	0.2
17	3.6	3.9	4.2	4.9	5.9	4.9	5.9
18	28.8	28.8	27.9	28.8	27.9	32.3	32.3
19	31.2	35.2	37.1	36.6	39.3	36.6	39.3
20	26.8	28.4	28.9	29.2	30.2	29.8	31.1
21	24.3	25.5	26.0	27.2	28.7	27.2	28.7
22	17.7	18.6	19.7	21.3	21.8	21.9	21.9
23	11.5	12.2	12.6	12.3	12.6	12.3	12.6
24	10.0	12.0	13.6	14.1	14.7	15.4	15.4
25–29	3.8	4.1	4.3	4.5	5.0	4.5	5.0
30–34	1.5	1.5	1.5	1.5	1.5	1.5	1.5
35–44	0.9	0.9	0.9	1.0	1.0	1.1	1.3
Part-time:							
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.7	0.7	0.7	0.7	0.7	0.8	0.8
18	3.7	4.4	4.6	4.4	4.6	4.4	4.6
19	3.9	4.2	4.5	4.3	4.5	4.3	4.5
20	6.3	7.6	8.4	7.7	8.6	7.7	8.6
21	5.7	7.4	7.6	7.8	8.1	8.1	8.5
22	8.1	8.6	9.0	9.7	10.7	9.9	11.0
23	5.3	5.5	5.5	5.6	5.6	5.6	5.6
24	4.6	5.1	5.3	5.1	5.4	5.1	5.4
25–29	5.2	5.2	5.2	5.3	5.3	5.3	5.3
30–34	3.6	3.8	3.8	3.9	3.9	4.0	4.0
35–44	3.9	3.9	3.9	4.6	5.0	4.8	5.4
Women							
Full-time:							
16	0.4	0.4	0.4	0.4	0.4	0.5	0.6
17	3.8	4.0	4.0	4.4	4.4	4.4	4.4
18	34.5	35.6	35.7	35.6	35.7	36.5	36.5
19	33.2	38.6	40.1	39.7	42.3	39.7	42.3
20	30.0	32.6	32.6	34.1	34.1	34.9	35.5
21	24.8	29.1	30.2	29.9	32.4	31.8	34.5
22	14.5	16.2	16.2	16.7	16.7	17.5	17.5
23	11.3	12.1	12.1	13.4	13.4	14.0	14.0
24	8.3	9.8	9.8	10.3	10.3	11.1	11.1
25–29	3.7	4.1	4.1	4.4	4.4	4.4	4.4
30–34	2.2	2.5	2.5	2.7	2.7	2.7	2.7
35–44	1.7	1.9	1.9	2.0	2.0	2.2	2.2
Part-time:							
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.8	0.8	0.8	0.9	0.9	1.1	1.2
18	4.5	5.8	6.0	5.8	6.0	5.8	6.0
19	4.4	5.1	5.1	5.7	6.2	5.7	6.2
20	6.9	7.6	7.6	7.8	7.8	7.8	7.8
21	5.8	6.6	6.6	6.6	7.0	6.9	7.0
22	9.8	10.5	10.5	11.3	11.3	11.5	11.5
23	7.6	8.4	8.4	8.5	8.5	8.9	8.9
24	5.6	6.2	6.5	6.5	7.0	6.7	7.3
25–29	6.5	7.0	7.0	7.3	7.3	7.9	8.1
30–34	5.0	5.0	5.0	5.3	5.4	5.3	5.4
35–44	7.3	7.5	7.5	7.8	7.8	8.2	8.2

Table A1.4.—Equations for selected college enrollment rates of men, by age and attendance status

Equation			R [2]	Durbin-Watson statistic [1]	Estimation technique
RTFT18M	=	$0.6 - 0.0001\text{P18M} - 0.004\text{UR1619}$ (-4.1) (-2.9)	0.65	1.1	OLS [2]
RTPT18M	=	$-0.02 + 0.001\text{UR1619} + 0.000002\text{YD91}$ (3.7) (4.8)	0.74	2.3	OLS [2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

RTFT18M = Enrollment rate of 18-year-old males enrolled full- time
RTPT18M = Enrollment rate of 18-year-old males enrolled part- time
P18M = 18-year-old male population
UR1619 = Unemployment rate of 16- to 19-year-olds
YD91 = Disposable income per capita in 1990–91 dollars

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1967 to 1990.

Table A1.5.—Equations for selected college enrollment rates of women, by age and attendance status

	Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
RTFT18W	= 0.4 - 0.00008P18W + 0.000007YD91 (-2.8) (3.1)	0.49	2.4	OLS[2]
RTPT18W	= -0.01 + 0.000004YD91 (5.5)	0.58	1.5	OLS[2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

RTFT18W =Enrollment rate of 18-year-old females enrolled full- time
RTPT18W =Enrollment rate of 18-year-old females enrolled part- time
P18W =18-year-old female population
YD91 =Disposable income per capita in 1990–91 dollars

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1967 to 1990.

Table A1.6.—Enrollment rates in public schools, by grade level

Grade level	Population base age	1990	Projected	
			1998	2003
Kindergarten	5	98.2	96.4	96.4
Grade 1	6	98.3	96.4	96.4
Elementary ungraded and special	5–13	1.7	1.7	1.7
Secondary ungraded and special	14–17	2.0	2.0	2.0
Postgraduate	18	0.3	0.3	0.3

Table A1.7.—Public school grade retention rates

Grade	1990	Projected	
		1998	2003
1 to 2	95.5	95.1	95.1
2 to 3	100.3	100.2	100.2
3 to 4	100.4	100.4	100.4
4 to 5	100.5	100.4	100.4
5 to 6	101.5	101.4	101.4
6 to 7	102.7	103.0	103.0
7 to 8	98.5	98.3	98.3
8 to 9	111.1	110.4	110.4
9 to 10	92.2	92.4	92.4
10 to 11	91.1	91.0	91.0
11 to 12	90.5	90.4	90.4

Table A1.8.—Full-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification

Age	Men			Women		
	1990	1998	2003	1990	1998	2003
	Undergraduate, 4-year institutions					
16–17 years old	69.3	70.1	70.1	65.7	67.9	67.9
18–19 years old	65.3	66.6	66.6	73.2	70.0	70.0
20–21 years old	81.5	80.6	80.6	81.5	82.4	82.4
22–24 years old	68.2	66.8	66.8	59.2	62.7	62.7
25–29 years old	40.1	40.1	40.1	41.2	41.2	41.2
30–34 years old	29.1	29.4	29.4	38.0	38.3	38.3
35 years and over	29.9	29.8	29.8	43.0	41.6	41.6
	Undergraduate, 2-year institutions					
16–17 years old	30.7	29.6	29.6	34.3	32.2	32.2
18–19 years old	34.7	33.4	33.4	26.8	30.0	30.0
20–21 years old	18.5	19.5	19.5	18.5	17.6	17.6
22–24 years old	14.6	14.6	14.6	19.2	16.9	16.9
25–29 years old	15.8	15.6	15.6	30.0	26.2	26.2
30–34 years old	16.5	18.3	18.3	36.6	34.6	34.6
35 years and over	26.6	23.8	23.8	33.9	33.0	33.0
	Postbaccalaureate, 4-year institutions					
16–17 years old	—	—	—	—	—	—
18–19 years old	—	—	—	—	—	—
20–21 years old	—	—	—	—	—	—
22–24 years old	17.3	18.6	18.6	21.6	20.4	20.4
25–29 years old	44.1	44.4	44.4	28.8	32.6	32.6
30–34 years old	54.4	52.3	52.3	25.4	27.1	27.1
35 years and over	43.6	46.5	46.5	23.1	25.4	25.4

—Not applicable.

NOTE: Projections shown for 1998 and 2003 were adjusted to add to 100 percent before computing projections shown in tables 3 through 22.

Table A1.9.—Part-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification

Age	Men			Women		
	1990	1998	2003	1990	1998	2003
Undergraduate, 4-year institutions						
16–17 years old	20.2	19.2	19.2	12.2	14.9	14.9
18–19 years old	20.2	19.7	19.7	14.1	16.7	16.7
20–21 years old	20.0	22.4	22.4	23.1	26.0	26.0
22–24 years old	36.2	34.0	34.0	35.7	31.2	31.2
25–29 years old	31.5	31.3	31.3	32.3	30.9	30.9
30–34 years old	26.8	28.1	28.1	27.7	26.7	26.7
35 years and over	27.8	27.2	27.2	23.4	25.4	25.4
Undergraduate, 2-year institutions						
16–17 years old	74.1	75.0	75.0	82.8	80.6	80.6
18–19 years old	74.0	73.9	73.9	80.9	78.4	78.4
20–21 years old	74.4	72.0	72.0	71.4	68.4	68.4
22–24 years old	51.4	53.1	53.1	50.3	55.1	55.1
25–29 years old	48.6	49.3	49.3	49.8	49.9	49.9
30–34 years old	51.0	50.0	50.0	55.9	56.1	56.1
35 years and over	45.9	46.6	46.6	54.9	53.8	53.8
Postbaccalaureate, 4-year institutions						
16–17 years old	5.8	5.8	5.8	5.0	4.5	4.5
18–19 years old	5.8	6.4	6.4	5.0	4.9	4.9
20–21 years old	5.6	5.7	5.7	5.6	5.7	5.7
22–24 years old	12.4	12.9	12.9	13.9	13.7	13.7
25–29 years old	19.9	19.3	19.3	17.9	19.2	19.2
30–34 years old	22.3	21.9	21.9	16.4	17.2	17.2
35 years and over	26.3	26.2	26.2	21.7	20.8	20.8

NOTE: Projections shown for 1998 and 2003 were adjusted to add to 100 percent before computing projections shown in tables 3 through 22.

Table A1.10.—Public school enrollment as a percent of total enrollment, by attendance status, sex, level enrolled, and by type of institution

Enrollment category	Men			Women		
	1990	1998	2003	1990	1998	2003
Full-time, undergraduate, 4-year institutions	69.8	69.6	69.6	69.2	69.1	69.1
Part-time, undergraduate, 4-year institutions	73.3	73.0	73.0	70.5	70.2	70.2
Full-time, undergraduate, 2-year institutions	91.9	91.3	91.3	90.4	89.4	89.4
Part-time, undergraduate, 2-year institutions	97.4	97.1	97.1	97.8	97.9	97.9
Full-time, postbaccalaureate, 4-year institutions	56.5	56.4	56.4	59.7	59.9	59.9
Part-time, postbaccalaureate, 4-year institutions	58.7	58.7	58.7	66.8	67.2	67.2

Table A1.11.—Graduate enrollment as a percent of total postbaccalaureate enrollment, by sex and attendance status, and by type and control of institution

Enrollment categoy	Men			Women		
	1990	1998	2003	1990	1998	2003
Full-time, 4-year, public	76.2	75.0	75.0	80.1	79.8	79.8
Part-time, 4-year, public	98.8	98.9	98.9	99.5	99.4	99.4
Full-time, 4-year, private	57.8	56.4	56.4	65.1	64.1	64.1
Part-time, 4-year, private	91.6	91.7	91.7	95.3	95.4	95.4

Table A1.12.—Full-time-equivalent of part-time enrollment as a percent of part-time enrollment, by level enrolled and by type and control of institution

Enrollment category	1990	1998	2003
Public, 4-year, undergraduate	40.4	40.3	40.3
Public, 2-year, undergraduate	33.6	33.6	33.6
Private, 4-year, undergraduate	39.4	39.4	39.4
Private, 2-year, undergraduate	40.3	40.1	40.1
Public, 4-year, graduate	36.1	36.2	36.2
Private, 4-year, graduate	38.2	38.2	38.2
Public, 4-year, first-professional	60.0	55.2	55.2
Private, 4-year, first-professional	54.2	56.4	56.4

Table A1.13.—Enrollment (assumptions)

Variables	Assumptions	Alternatives	Tables
Elementary and Secondary enrollment	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates.	Middle (no alternatives)	1, 2
	Public enrollment rates and public grade retention rates will remain constant at levels consistent with the most recent rates.	Middle (no alternatives)	1, 2
	The percentage of 7th and 8th grade public students enrolled in school organized as secondary schools will remain constant at levels consistent with the most recent rates.	Middle (no alternatives)	2
College full-time and part-time enrollment, by age			
Men	Age-specific enrollment rates for the younger age cohorts will increase over the projection period, while those for the older age groups are expected to remain constant at levels consistent with the most recent rates or increase slightly.	Middle	3–5 9–16
	Age-specific enrollment rates will equal the middle alternative rate or change at a slower rate.	Low	3–5 9–16
	Age-specific enrollment rates will either equal the middle alternative or increase at a faster rate, based on past trends.	High	3–5 9–16
Women	Age-specific enrollment rates for the younger age cohorts will increase over the projection period, while those for the older age groups are expected to increase slightly.	Middle	3–5 9–16
	Age-specific enrollment rates will equal the middle alternative rate or change at a slower rate.	Low	3–5 9–16
	Age-specific enrollment rates will either equal the middle alternative or increase at a faster rate, based on past trends.	High	3–5 9–16
College enrollment, by sex, attendance status, and level enrolled by student, and by type of institution	For each group and for each attendance status separately, enrollment by sex and level enrolled by student, and by type of institution as a percent of total enrollment, will follow past trends through 2003. For each age group and attendance status category, the restriction that the sum of the percentages must equal 100 percent was applied.	High, middle, and low	3–5 9–16
College enrollment, by control of institution	For each enrollment category, by sex, attendance status, and level enrolled by student, and by type of institution, public enrollment as a percent of total enrollment will remain constant at levels consistent with the most recent rates.	High, middle, and low	3–5 9–16
Graduate enrollment	For each enrollment category, by sex and attendance status of student, and by type and control of institution, graduate enrollment as a percent of postbaccalaureate enrollment will remain constant at levels consistent with the most recent rates.	High, middle, and low	17
Full-time-equivalent of part-time enrollment	For each enrollment category, by type and control of institution and level enrolled by student, the percent that full-time-equivalent of part-time enrollment is of part-time enrollment will remain constant at levels consistent with the most recent rates.	High, middle, and low	23–25

Table A1.14.—Enrollment (estimation methods)

Variables	Years	Estimation method	Tables
Enrollment in private elementary and secondary schools, by level	1988 1989 1990	Grade-by-grade data for private elementary, secondary, and combined schools were aggregated to estimate private school enrollment by grade level.	1 2
Enrollment in institutions of higher education, by age and attendance status	1983 1988 1991	For each sex, enrollment data from the Bureau of Census by individual ages and by attendance status for 2-year age groups were combined by assuming that within the 2-year age groups, age and attendance status were distributed independently. The resultant enrollment estimates by age and attendance status were then adjusted to NCES enrollment counts by attendance status.	6 7 8

A2. High School Graduates

Projections of public high school graduates were developed in the following manner. The number of public high school graduates was expressed as a percent of grade 12 enrollment in public schools for 1972 to 1990. This percent was projected using single exponential smoothing and applied to projections of grade 12 enrollment to yield projections of high school graduates in public schools. (The dropout rate is not related to this percent. This percent does not make any assumptions regarding the dropout rate.) The grade 12 enrollment was projected based on state-by-state retention rates and population projections developed by the Bureau of the Census. This percent was assumed to remain constant at levels consistent with the most recent rates. This method assumes that past trends in factors affecting graduation will continue over the projection period.

Projections of private high school graduates were derived in the following manner. For 1990–91, the ratio of private high school graduates to public school graduates was calculated. This 1990–91 ratio was held constant over the projection period. It was then applied to projections of public high school graduates to yield projections of private high school graduates. This method assumes that the future pattern of private high school graduates will be the same as that of public high school graduates. The reader should be aware that a number of factors could alter the assumption of a constant ratio over the projection period.

Projection Accuracy

An analysis of projections from models used in the past nine editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for projections of public high school graduates were 0.5 percent for 1 year ahead, 1.2 percent for 2 years ahead, and 1.9 percent for 5 years ahead. For the 2-year-ahead prediction, this means that one would expect the projection to be within 1.2 percent of the actual value, on the average.

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A3. Earned Degrees Conferred

Projections of associate, bachelor's, master's, doctor's, and first-professional degrees by sex were based on demographic models that relate degree awards to college-age populations and college enrollment by level enrolled and attendance status.

Associate Degrees

Associate degree projections by sex were based on undergraduate enrollment by attendance status in 2-year institutions. Results of the regression analysis used to project associate degrees by sex are shown in table A3.1.

Bachelor's Degrees

Bachelor's degree projections by sex were based on the 18- to 24-year-old population, 25- to 34-year-old population, and undergraduate enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project bachelor's degrees by sex are shown in table A3.2.

Master's Degrees

Master's degree projections by sex were based on the 35- to 44-year-old population and graduate enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project master's degrees by sex are shown in table A3.3.

Doctor's Degrees

Doctor's degree projections by sex were based on the 35- to 44-year-old population, graduate enrollment by attendance status in 4-year institutions, and a time trend variable. Results of the regression analysis used to project doctor's degrees by sex are shown in table A3.4.

First-Professional Degrees

First-professional degree projections by sex were based on first-professional enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project first-professional degrees by sex are shown in table A3.5.

Methodological Tables

These tables describe equations used to calculate projections (tables A3.1 through A3.5), and basic assumptions underlying projections (table A3.6).

Projection Accuracy

An analysis of projection errors from similar models used in the past seven editions of *Projections of Education Statistics* indicates that mean absolute percentage errors (MAPEs) for bachelor's degree projections were 2.1 percent for 1 year out, 3.0 percent for 2 years out, and 4.2 percent for 5 years out. For the 1-year-out prediction, this means that one would expect the projection to be within 2.1 percent of the actual value, on the average. For first-professional degrees, the MAPEs were 2.6, 2.4, and 1.6 percent, respectively. For doctor's degrees, based on the past six editions of *Projections of Education Statistics*, the MAPEs were 2.9, 3.8, and 3.3 percent, respectively. MAPEs for master's degrees, based on the past five editions of *Projections of Education Statistics*, were 2.6, 5.1, and 4.7, respectively. MAPEs for associate degrees, based on the past three editions of *Projections of Education Statistics*, were 1.2 percent for 1 year out, 2.1 percent for 2 years out, and 6.1 percent for 3 years out.

Table A3.1.—Equations for associate degrees

			Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
Men	ASSOCM	=	15,505.4 + 182.8UGFTM2 + 19.6UGPTM2 (5.9) (2.0)	0.85	1.7	OLS[2]
Women	ASSOCW	=	-588.1 + 279.9UGFTW2 (44.1)	0.99	1.4	OLS[2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

ASSOCM =Number of associate degrees awarded to men
ASSOCW =Number of associate degrees awarded to women
UGFTM2 =Full-time male undergraduate enrollment in 2-year institutions lagged 2 years
UGPTM2 =Part-time male undergraduate enrollment in 2-year institutions lagged 2 years
UGFTW2 =Full-time female undergraduate enrollment in 2-year institutions lagged 2 years

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1969–70 to 1990–91.

Table A3.2.—Equations for bachelor's degrees

			Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
Men	BACHM	=	135,842.1 - 7.6P1824M - 2.6P2534M (-3.0) (-2.4)	0.79	1.1	OLS[2]
			+ 239.3UGFT4M - 80.3UGPT4M (7.3) (-0.9)			
Women	BACHW	=	158,348.1 - 14.9P1824W + 279.5UGFT4W (-4.2) (11.3)	0.99	1.6	OLS[2]
			- 100.5UGPT4W (-2.1)			

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251-252.

[2] OLS equals Ordinary Least Squares.

Where:

BACHM =Number of bachelor's degrees awarded to men
BACHW =Number of bachelor's degrees awarded to women
P1824M =Population of 18- to 24-year-old males

P1824W =Population of 18- to 24-year-old females

P2534M =Population of 25- to 34-year-old males
UGFT4M =Full-time male undergraduate enrollment in 4-year institutions lagged 3 years
UGPT4M =Part-time male undergraduate enrollment in 4-year institutions lagged 3 years
UGFT4W =Full-time female undergraduate enrollment in 4-year institutions lagged 3 years
UGPT4W =Part-time female undergraduate enrollment in 4-year institutions lagged 3 years

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1969–70 to 1990–91.

Table A3.3.—Equations for master's degrees

		Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
Men	MASTM	= - 35,221.0 - 4.7P3544M + 1,154.0GFTM (-6.7) (5.5) - 190.8GPTM (-2.0)	0.78	1.3	OLS[2]
Women	MASTW	= 31,320.0 - 4.0P3544W + 370.2GPTW (-4.9) (14.3)	0.96	1.2	OLS[2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

MASTM =Number of master's degrees awarded to men
MASTW =Number of master's degrees awarded to women
P3544M =Population of 35- to 44-year-old males
P3544W =Population of 35- to 44-year-old females
GFTM =Full-time male graduate enrollment lagged 2 years
GPTM =Part-time male graduate enrollment lagged 2 years
GPTW =Part-time female graduate enrollment

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1969–70 to 1990–91.

Table A3.4.—Equations for doctor's degrees

			Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
Men	DOCM	=	- 12,850.3 + 0.6P3544M + 131.6GFTM (2.5) (5.2) - 785.0TIME (-7.6)	0.87	1.0	OLS[2]
Women	DOCW	=	2,491.3 + 5.1GPTW + 419.5TIME (1.2) (6.6)	0.99	1.3	AR1[3]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

[3] AR1 equals an estimation procedure for correcting the problem of first-order autocorrelation. Specifically, the maximum likelihood procedure of the statistical program RATS was used to estimate rho. In this equation, rho is equal to 0.70 with a t-statistic of (3.6). For a general discussion of the problem of autocorrelation, and the method used to forecast in the presence of autocorrelation, see G. Judge, W. Hill, R. Griffiths, H. Lutkepohl, and T. Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, pages 315-318.

Where:

DOCM =Number of doctor's degrees awarded to men
DOCW =Number of doctor's degrees awarded to women
P3544M =Population of 35- to 44-year-old males
P3544W =Population of 35- to 44-year-old females
GFTM =Full-time male graduate enrollment
GPTW =Part-time female graduate enrollment lagged 1 year
TIME =Time trend, 1969–70 equals 1

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1969–70 to 1990–91.

Table A3.5.—Equations for first-professional degrees

			Equation	R^2	Durbin-Watson statistic [1]	Estimation technique
Men	FPROM	=	-8,447.1 + 344.4FPFTM (28.4)	0.98	1.2	OLS [2]
Women	FPROW	=	-2,646.8 + 261.2FPFTW + 509.2FPPTW (8.7) (2.2)	0.99	1.3	OLS [2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

FPROM =Number of first-profesional degrees awarded to men
FPROW =Number of first-professional degrees awarded to women
FPFTM =Full-time male first-professional enrollment lagged 2 years
FPFTW =Full-time female first-professional enrollment lagged 1 year
FPPTW =Part-time female first-professional enrollment lagged 3 years

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equations is from 1969–70 to 1990–91.

Table A3.6.— Earned degrees conferred (assumptions)

Variables	Assumptions	Alternatives	Tables
Associate degrees			
Men	The number of associate degrees awarded to men is a linear function of full-time and part-time undergraduate enrollment in 2-year institutions lagged 2 years. This relationship will continue through 2002–2003.	Middle	27
Women	The number of associate degrees awarded to women is a linear function of full-time undergraduate enrollment in 2-year institutions lagged 2 years. This relationship will continue through 2002–2003.	Middle	27
Bachelor's degrees			
Men	The number of bachelor's degrees awarded to men is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions lagged 3 years, the 18- to 24-year-old population, and 25- to 34-year-old population. This relationship will continue through 2002–2003.	Middle	28
Women	The number of bachelor's degrees awarded to women is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions lagged 3 years and the 18- to 24-year-old population. This relationship will continue through 2002–2003.	Middle	28
Master's degrees			
Men	The number of master's degrees awarded to men is a linear function of full-time and part-time graduate enrollment lagged 2 years and the 35- to 44-year-old population. This relationship will continue through 2002–2003.	Middle	29
Women	The number of master's degrees awarded to women is a linear function of part-time graduate enrollment and the 35- to 44-year-old population. This relationship will continue through 2002–2003.	Middle	29
Doctor's degrees			
Men	The number of doctor's degrees awarded to men is a linear function of full-time graduate enrollment, time, and the 35- to 44-year-old population. This relationship will continue through 2002–2003.	Middle	30
Women	The number of doctor's degrees awarded to women is a linear function of part-time graduate enrollment lagged 1 year and time. This relationship will continue through 2002–2003.	Middle	30
First-professional degrees			
Men	The number of first-professional degrees awarded to men is a linear function of full-time first-professional enrollment lagged 2 years. This relationship will continue through 2002–2003.	Middle	31
Women	The number of first-professional degrees awarded to women is a linear function of full-time first-professional enrollment lagged 1 year and part-time first-professional enrollment lagged 3 years. This relationship will continue through 2002–2003.	Middle	31

A4. Classroom Teachers

Public Classroom Teachers

Numbers of public elementary and secondary classroom teachers were projected using a model similar to that used in *Projections of Education Statistics to 2002*, only the coefficients were re-estimated. The number of public school teachers was projected separately for the elementary and secondary levels. The elementary teachers were modeled as a function of disposable income per capita, local education revenue receipts from state sources per capita, and elementary enrollment. Secondary teachers were modeled as a function of disposable income per capita, education revenue receipts from state sources per capita (lagged 3 years), and secondary enrollment. Both disposable income per capita and local education revenue receipts from state sources were in constant 1990–91 dollars.

The equations in this section should be viewed as forecasting rather than structural equations, as the limitations of time and available data precluded the building of a large-scale, structural teacher model. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2s), the t-statistics of the coefficients, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good projections only if the relationships that existed among the variables in the past continue throughout the projection period.

The public elementary classroom teacher model is:

$$\begin{aligned} \text{ELTCH} &= b_0 + b_1\text{PCI} \\ &\quad + b_2\text{SGRANT} + b_3\text{ELENR} \end{aligned}$$

where:

ELTCH is the number of public elementary classroom teachers.

PCI is disposable income per capita in 1990–91 dollars;

SGRANT is education revenue receipts from state sources per capita in 1990–91 dollars; and

ELENR is the number of students enrolled in public elementary schools.

Each variable affects the number of teachers in the expected way. As people receive more income, the state spends more money on education, and as enrollment increases, the number of elementary teachers hired increases.

The public secondary classroom teacher model is:

$$\begin{aligned} \text{SCTCH} &= b_0 + b_1\text{PCI} \\ &\quad + b_2\text{SGRANT3} + b_3\text{SCENR} \end{aligned}$$

where:

SCTCH is the number of public secondary classroom teachers;

PCI is disposable income per capita in 1990–91 dollars;

SGRANT3 is education revenue receipts from state sources per capita in 1990–91 dollars, lagged 3 years, and;

SCENR is the number of students enrolled in public secondary schools.

Each variable affects the number of teachers in the expected way. As people receive more income, the state spends more money on education, and as enrollment increases, the number of secondary teachers hired increases.

Table A4.1 summarizes the results for the elementary and secondary public teacher models.

Enrollment is by organizational level, not by grade level. Thus, secondary enrollment is not equal to grade 9–12 enrollment. This is because some states count some grade 7 and 8 enrollment as secondary. The distribution of the number of teachers is by organizational level, not by grade span.

Private Classroom Teachers

Projections of private classroom teachers were derived in the following manner. For 1991, the ratio of private school teachers to public school teachers was calculated by organizational level. These 1991 ratios were held constant over the projection period. The ratios were then applied to projections of public school teachers by organizational level to yield projections of private school teachers. This method assumes that the future pattern in the trend of private school teachers will be the same as that for public school teachers. The reader is cautioned that a number of factors could alter the assumption of constant ratios over the projection period.

The total number of public school teachers, enrollment by organizational level, and education revenue receipts from state sources used in these projections were from the Common Core of Data (CCD) survey conducted by NCES. The proportion of teachers by organizational level was taken from the National Education Association and then applied to the total number of teachers from CCD to produce the number of teachers by organizational level. The number of private classroom teachers was obtained from "Public and Private Elementary and Secondary Education Statistics: School Year 1991–92," *Early Estimates.*

Disposable income and population were obtained from DRI/McGraw-Hill.

Projection Accuracy

An analysis of projection errors from the past nine editions of *Projections of Education Statistics* indicated that the mean absolute percentage errors (MAPEs) for projections of classroom teachers in public elementary and secondary schools were 0.8 percent for 1 year out, 1.5 percent for 2 years out, 3.2 percent for 5 years out, and 2.6 percent for 10 years out. For the 2-year-ahead prediction, this means that one would expect the projection to be within 1.5 percent of the actual value, on the average.

Table A4.1.—Equations for public elementary and secondary classroom teachers

			Equation	R^2	Durbin-Watson statistic[1]	Estimation technique
Elementary	ELTCH	=	$-178.9 + \underset{(8.4)}{0.05PCI91} + \underset{(3.1)}{0.5SGRANT} + \underset{(10.7)}{0.02ELENR}$	0.99	1.5	OLS[2]
Secondary	SCTCH	=	$-181.6 + \underset{(8.1)}{0.03PCI91} + \underset{(3.5)}{0.3SGRANT3} + \underset{(21.9)}{0.04SCENR}$	0.98	2.0	OLS[2]

R^2 = Coefficient of determination.

[1] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.

[2] OLS equals Ordinary Least Squares.

Where:

ELTCH =Number of public elementary classroom teachers
SCTCH =Number of public secondary classroom teachers
PCI91 =Disposable income per capita in 1990–91 dollars
SGRANT =Education revenue receipts from state sources per capita
SGRANT3 =Education revenue receipts from state sources per capita lagged 3 years
ELENR =Number of students enrolled in public elementary schools
SCENR =Number of students enrolled in public secondary schools

NOTE: Numbers in parentheses are t-statistics. The time period of observations used in the equation for elementary teachers is from 1960 to 1991. The time period used in the equation for secondary teachers is from 1965 to 1991.

A5. Expenditures of Public Elementary and Secondary Schools

Econometric techniques were used to produce the projections for current expenditures and average teacher salaries. The equations in this chapter should be viewed as forecasting, rather than structural, equations. The limitations of time and available data precluded the building of large-scale, structural, models. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2's), the t-statistics of the variables, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good forecasting results only if the relationships that existed among the variables in the past continue throughout the projection period.

The Elementary and Secondary School Current Expenditure Model

There has been a large body of work, both theoretical and empirical, on the demand for local public services such as education. The elementary and secondary school current expenditures model is based on this work.

The model which is the basis for the elementary and secondary school current expenditure model has been called the median voter model. In brief, the theory states that spending for each public good in the community (in this case, education), reflects the preferences of the "median voter" in the community. This individual is identified as the voter in the community with the median income and median property value. Hence, the amount of spending in the community reflects the price of education facing the voter with the median income, as well as his income and tastes. There are competing models, in which the level of spending reflects the choices of others in the community, such as the "bureaucrats." The median voter model was chosen as the basis of the elementary and secondary school current expenditure model as it has been the one most thoroughly studied.

There has been a large number of empirical studies of the demand for education expenditures using the median voter model. In most instances, researchers have used cross-sectional data. The elementary and secondary school current expenditure model was built on the knowledge gained from these cross-sectional studies and was adapted from them for use in a time series study.

In a median voter model, the demand for education expenditures is typically linked to four different types of variables: 1) measures of the income on the median voter; 2) measures of intergovernmental aid for education going indirectly to the median voter; 3) measures of the prices to the median voter of providing one more dollar of education expenditures per pupil; and 4) any other variables which may affect one's tastes for education. The elementary and secondary school current expenditure model contains variables reflecting the first three types of variables. The model is:

$$\begin{aligned}\ln(\mathrm{CUREXP}) &= b_0 + b_1\ln(\mathrm{PCI}) + b_2\ln(\mathrm{SGRANT}) \\ &\quad + b_3\ln(\mathrm{ADAPOP})\end{aligned}$$

where:

ln indicates the natural log;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance in constant 1990–91 dollars;

PCI equals disposable income per capita in constant 1990–91 dollars;

SGRANT equals local governments' education revenue receipts from state sources, per capita, in constant 1990–91 dollars; and

ADAPOP equals the ratio of average daily attendance to the population.

The model was estimated using a method for correcting for autocorrelation —the maximum likelihood search procedure of the program Regression Analysis of Time Series (RATS). This was done because the test statistics were significantly better than those from the ordinary least squares (OLS) estimation, and the Durbin-Watson statistic was in the inconclusive region when the model was estimated using OLS. This is the first edition of *Projections of Education Statistics* in which this method of estimation, rather than OLS, was used. The sample period was from 1959–60 to 1989–90. All variables were placed in log form, as the test statistics were superior for that form and there is some evidence from the cross-sectional studies that the log form is superior.

There are potential problems with using a model for local government education expenditures for the nation as a whole. Two such problems concern the variable SGRANT. First, the amount of money which local governments receive for education from state government varies substantially by state. Second, the formulas used to apportion state moneys for education among local govenments vary by state.

Beginning in 1988–89, there was a major change in the survey form used to collect data on current expenditures. This new survey form produces a more complete measure of current expenditures; therefore, the values for current expenditures are not completely comparable to the previously collected numbers. In a crosswalk study, data for a majority of states were also collected for 1986–87 and 1987–88 that were comparable to data from the new survey form. A comparison of these data with those from the old survey form suggests that the use of the new survey form has increased the national figure for current expenditures by approximately 1.4 percent over what it would have been if the survey form had not been changed. When the model was estimated, all values for current expenditures before 1988–89 were increased by 1.4 percent.

The results for the model are shown in table A5.1. Each variable affects current expenditures in the direction that would be expected. As people receive more income, either directly (PCI) or from the state government (SGRANT), the level of spending increases. As the number of pupils increases relative to the population (that is, as ADAPOP increases), the level of spending per pupil falls.

From the cross-sectional studies of the demand for education expenditures, we have a rough idea of how sensitive current expenditures are to changes in PCI and ADAPOP. We can compare the results from this model with those from the cross-sectional studies. For this model, an increase in PCI of 1 percent, with SGRANT and ADAPOP held constant, would result in an increase of current expenditures per pupil in average daily attendance of approximately 0.64 percent. With PCI and SGRANT held constant, an increase of 1 percent in ADAPOP would result in a decrease in current expenditures per pupil in average daily attendance of approximately 0.33 percent. Both numbers are well within the range of what has been found in other studies.

Projections for total current expenditures were made by multiplying the projections for current expenditures per pupil in average daily attendance by projections for average daily attendance. The projections for total current expenditures were divided by projections for fall enrollment to produce projections of current expenditures per pupil in fall enrollment. Current-dollar projections were produced by multiplying the constant-dollar projections by projections for the Consumer Price Index.

Three alternative sets of projections for current expenditures are presented: the middle alternative projections, the low alternative projections, and the high alternative projections. The alternative sets of projections differ because of varying assumptions about the growth paths for disposable income and revenue receipts from state sources.

The middle projections for disposable income are from DRI/McGraw–Hill (DRI) trend scenario. The trend scenario depicts a mean of possible paths that the economy could take over the forecast period, barring major shocks. The economy, in this scenario, evolves smoothly, if unspectacularly. In this scenario, disposable income per capita rises each year from 1992–93 to 2002–2003 at rates between 1.0 and 2.3 percent.

The low projections for disposable income are from DRI's pessimistic scenario. In the pessimistic scenario, growth is lower, with the change in disposable income per capita ranging between 0.2 and 2.8 percent during the period from 1992–93 to 2002–2003.

The high projections for disposable income per capita are from DRI's optimistic scenario. In this scenario, disposable income per capita rises each year from 1992–93 to 2002–2003 at rates between 1.2 and 2.4 percent.

Projections for revenue receipts from state sources were produced using two different methods. For the middle alternative projections and high alternative projections, projections for revenue receipts from state sources were largely produced using an econometric model. The low alternative projections were produced by using the same method used to produce the low projections presented in the previous edition of *Projections of Education Statistics*.

The model for revenue receipts from state sources is:

$$\begin{aligned} \text{SGRANT} &= b_0 + b_1\text{PERTAX1} + b_2\text{BUSTAX1} \\ &\quad + b_3\text{ADAPOP} + b_4\text{ININCR} \end{aligned}$$

where:

SGRANT equals local governments' education revenue receipts from state sources, per capita, in constant 1990–91 dollars;

PERTAX1 equals personal taxes and nontax receipts to state and local governments, per capita, in constant 1990–91 dollars lagged one period;

BUSTAX1 equals indirect business taxes and tax accruals, excluding property taxes, to state and local governments, per capita, in constant 1990–91 dollars lagged one period;

ADAPOP equals the ratio of average daily attendance to the population; and

ININCR equals the rate of change in the inflation rate measured by the Consumer Price Index.

This equation was estimated using ordinary least squares for the sample period from 1960–61 to 1989–90. The results for the model are shown in table A5.1.

The values of the coefficients in this model follow expectations. As state governments receive more revenue (higher PERTAX1 and BUSTAX1), they have more money to send to local governments for education. As the enrollment increases relative to the population (higher ADAPOP), so does the amount of aid going to education. Finally, in years with rapidly increasing inflation (higher ININCR), the real dollar values of revenue receipts from state governments to local governments would fall, other things being equal.

Two alternative projections were produced for SGRANT using this model. Each is based on a different set of projections for personal taxes, business taxes, and the rate of change in the inflation rate. The middle set of projections was produced using the values for these variables from DRI's trend scenario, and the high set of projections was produced using the values from DRI's optimistic scenario. In the middle set of projections, personal taxes and nontax receipts increase at rates between 2.1 and 4.5 percent and indirect business taxes and tax accruals increase at rates between 1.3 and 5.1 percent. In the high set of projections, personal taxes and nontax receipts increase at rates between 1.3 and 5.1 percent, and indirect business taxes and tax accruals increase at rates between 1.6 and 5.2 percent.

The values for SGRANT used to produce projections for CUREXP for some years for the middle alternative projections and the high alternative projections were altered from those produced by the model. For the middle alternative, the values for 1993-94, 1994–95, and 1995-96 were increased at a lower rate than those produced by the model. For the middle and high alternatives, the values for 1992–93 were increased at a higher rates than those produced by the model. The values for the years after 1995–96 were produced using the growth rates produced by the model.

A third scenario was produced using an alternative method: revenue receipts from state sources are assumed to increase at a rate equal to the growth rate of state and local purchases of goods and services as forecast by DRI in their pessimistic scenario. As education spending's share of all state and local government expenditures has been steadily increasing, this method may result in an underestimate.

In the middle set of projections, revenue receipts from state sources increase at rates between 1.7 and 2.9 percent for the period from 1992–93 to 2002–2003. In the low set of projections, they increase at rates between minus 1.5 and 2.4 percent. In the high set of projections, they increase at rates between 2.2 and 5.8 percent.

The Elementary and Secondary Teacher Salary Model

Most studies conducted on teacher salaries, like those on current expenditures, have used cross-sectional data. Unlike current expenditures models, however, the models for teacher salaries from these existing cross-sectional studies cannot easily be reformulated for use with time-series data. One problem is that we do not have sufficient information concerning the supply of qualified teachers who are not presently teaching. Hence, the elementary and secondary salary model contains terms that measure the demand for teachers in the economy.

The elementary and secondary teacher salary model is:

$$\text{SALARY} = b_0 + b_1\text{CUREXP} + b_2\text{ADAPOP} + b_3\text{DIFADA1}$$

where:

SALARY equals the average annual salary of teachers in public elementary and secondary schools in constant 1990–91 dollars;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance in constant 1990–91 dollars;

ADAPOP equals the ratio of average daily attendance to the population; and

DIFADA1 equals the change in average daily attendance lagged 1 period.

The model was estimated using the period from 1959–60 to 1990–91 as a sample period. To estimate the elementary and secondary teacher salary model, a method for correcting for autocorrelation—the maximum likelihood search procedure of the program RATS—was used. This was done because the test statistics were significantly better than those from the OLS estimations, and the Durbin-Watson statistic was in the inconclusive region when the model was estimated using OLS. The Durbin-Watson statistic, however, is still in the inconclusive range, suggesting that there is still a problem with autocorrelation.

Due to the effects caused by the change shown in survey forms, the values for current expenditures for 1959–60 to 1987–88 were increased by 1.4 percent.

The results for this model are also shown in table A5.1.

There is no literature for comparing the sizes of the coefficients. However, the direction of the impact each variable has on salaries is as expected: As the level of spending per pupil increases (higher CUREXP), more teachers can be hired, so demand for teachers increases and salaries increase; as the number of students increases (higher ADAPOP and DIFADA1), demand for teachers increases, so salaries increase.

As for current expenditures, three different scenarios are presented for teacher salaries. The same projections for ADAPOP and DIFADA1 are used for each alternative projection; the sole difference between the projections is in the projection for current expenditures. The middle alternative projection for salaries uses the middle alternative projection for current expenditures. The low alternative projection for salaries uses the low alternative projection for current expenditures. The high alternative projection for salaries uses the high alternative projection for current expenditures.

Current expenditures, average teacher salaries, and the number of teachers are interrelated. Hence, an exercise was conducted to see whether the projections of these three time series were consistent.

The number of teachers was multiplied by the average salary and then divided by current expenditures for every school year from 1977–78 until 2002–2003 (using the middle alternative projection for teachers, salaries, and current expenditures). The resulting value shows the portion of current expenditures that go toward teacher salaries. The values for the projection period were all within the range of the values for the historical period.

The results of this exercise indicate that the projections of these three time series are consistent.

Projection Accuracy

This is the fifth consecutive year in which *Projections of Education Statistics* has contained projections of current expenditures and teacher salaries. The actual values of current expenditures and teacher salaries can be compared with the projected values in the previous editions to examine the accuracy of the models.

The projections from the various editions of *Projections of Education Statistics* were placed in 1981–82 dollars using the Consumer Price Indices that appeared in each edition.

The projections for current expenditures presented in *Projections of Education Statistics to 1997–98* were produced by a model slightly different from the model used for the projections presented in this edition: calendar year data, rather than school year data, were used for disposable income, the population, and the Consumer Price Index. The independent variables used in *Projections of Education Statistics to 2000, Projections of Education Statistics to 2001: An Update*, and *Projections of Education Statistics to 2002* were the same as those used in this edition. In the four previous editions of *Projections of Education Statistics*, ordinary least squares was used to estimate the model. In the present edition, a method for correcting for autocorrelation was used.

Mean absolute percentage errors (MAPEs) were calculated for current expenditures and current expenditures per pupil. The MAPEs for projections of current expenditures were 1.7 percent for the 1-year-ahead projections, 2.6 percent for the 2-years-ahead projections, 2.5 percent for the 3-years-ahead projection, 2.1 percent for the 4-years-ahead projection, and 0.6 percent for the 5-years-ahead projection. The MAPEs for current expenditures per pupil were 1.3 percent (1-year-ahead), 1.9 percent (2-years-ahead), 1.7 percent (3-years-ahead), 1.5 percent (4-years-ahead), and 0.8 percent (4-years-ahead).

Some of the differences between the actual values and the projected values for current expenditures and current expenditures per pupil are due to the change in the survey form for current expenditures that took place in 1988–89. The results of the crosswalk study suggest that values for current expenditures as presently collected are approximately 1.4 percent higher than they would have been if no change had been made. If the projections for 1988–89, 1989–90, and 1990–91 which appeared in *Projections of Education Statistics to 1997–98, Projections of Education Statistics to 2000, Projections of Education Statistics to 2001: An Update*, are increased by 1.4 percent, the MAPEs decrease. When this adjustment was made, the MAPEs for current expenditures were 1.0 percent (1-year-ahead), 1.6 percent (2-years-ahead), 1.2 percent (3-years-ahead), 0.7 percent (4-years-ahead), and 0.8 percent (5-years-ahead), and the MAPEs for current expenditures per pupil were 0.6 percent (1-year-ahead), 1.1 percent (2-years-ahead), 1.2 percent (3-years-ahead), 0.3 percent (4-years-ahead), and 0.6 percent (5-years-ahead).

Projections for teacher salaries also appeared in the four most recent editions of *Projections of Education Statistics*. The projections of teacher salaries presented in the earlier editions were produced using a similar set of independent variables. The same set of independent variables was used to produce the projections in *Projections of Education Statistics to 2000*. In the other three editions of *Projections of Education Statistics* in which projections of teacher salaries appear, an additional variable, the change in average daily attendance lagged two periods, was also included. The projections presented in *Projections of Education Statistics to 1997–98* were produced by using calendar year data, rather than school year data, for the population and the Consumer Price Index.

The MAPEs for projections of teacher salaries were 1.2 percent (1-year-ahead), 2.0 percent (2-years-ahead), 2.4 percent (3-years-ahead), 4.0 (4-years-ahead), and 6.8 (5-years-ahead).

Sources of Past and Projected Data

Numbers from several different sources were used to produce these projections. In some instances, the time series used were made by either combining numbers from various sources or manipulating the available numbers. The sources and the methods of manipulation are described here.

The time series used for current expenditures was compiled from several different sources. For the school years ending in even numbers from 1959–60 to 1975–76, the numbers for current expenditures were taken from various issues of *Statistics of State School Systems*, published by NCES. The numbers for the school years ending in odd numbers during the 1960s were taken from various issues of the National Education Association's *Estimates of School Statistics*. For the school years ending in odd numbers during the 1970s, up to and including 1976–77, the numbers were taken from various issues of *Revenues and Expenditures for Public Elementary and Secondary Education*, published by NCES. For the school years from 1977–78 until 1989–90, the numbers were taken from the NCES Common Core of Data survey and unpublished data. The numbers for 1990–91 and 1991–92 were taken from the 1991–92 *Early Estimates*.

For 1974–75 and 1976–77, expenditures for summer schools were subtracted from the published figures for current expenditures. The value for 1972–73 was the sum of current expenditures at the local level, expenditures for administration by state boards of education and state departments of education, and expenditures for administration by intermediate administrative units.

Note that although the data from the different sources are similar, they are not entirely consistent. Also, the NCES numbers beginning with 1980–81 are not entirely consistent with the earlier NCES numbers, due to differing treatments of items such as expenditures for administration by state governments and expenditures for community services.

For most years, the sources for the past values of average daily attendance were identical to the sources for current expenditures. For 1978–79, the number was taken from

Revenues and Expenditures for Public Elementary and Secondary Education.

Projections for average daily attendance for the period from 1990–91 to 2002–2003 were made by multiplying the projections for enrollment by the average value of the ratios of average daily attendance to the enrollment from 1980–81 to 1989–90; this average value was approximately 0.93.

The values for fall enrollment from 1959–60 to 1977–78 were taken from issues of the NCES publication *Statistics of Public Elementary and Secondary Schools.* The 1978–79 value was taken from the *NCES Bulletin* of October 23, 1979, "Selected Public and Private Elementary and Secondary Education Statistics." The values from 1979–80 to 1990–91 were taken from the NCES Common Core of Data survey. The number for 1991–92 was taken from the 1991–92 *Early Estimates.* The projections for fall enrollment are those presented in Chapter 1.

For 1959–60 to 1989–90, the sources for revenue receipts from state sources were the two NCES publications *Statistics of State School Systems* and *Revenues and Expenditures for Public Elementary and Secondary Education* and the NCES Common Core of Data survey. The methods for producing the alternative projections for revenue receipts from state sources are outlined above.

The numbers for average teacher salaries were taken from various issues of the National Education Association's *Estimates of School Statistics.*

Both the past values and the projected values for the population, disposable income per capita, personal taxes and nontax receipts to state and local governments, and indirect business taxes and tax accruals to state and local governments, were from DRI's "Off-line U.S. Economic Service: Long-term Option." The past values and the future values of the Bureau of Labor Statistic's Consumer Price Index for all urban consumers, which was used for adjusting current expenditures, teacher salaries, revenue receipts from state sources, and the state revenue variables, were also obtained from DRI.

The values of all the variables from DRI were placed in school-year terms. The school-year numbers were calculated by taking the average of the last two quarters of 1 year and the first two quarters of the next year.

The Elementary and Secondary School Price Index was considered as a replacement for the Consumer Price Index for placing current expenditures and teacher salaries in constant dollars. As projections of the price index are required for placing the forecasts into current dollars, and as there are no projections of the Elementary and Secondary School Price Index, the Consumer Price Index was used.

Table A5.1.—Equations for current expenditures per pupil in average daily attendance, average annual salaries of teachers, and education revenue receipts from state sources

Dependent variable	Equation	$\hat{R}^2$	Durbin-Watson statistic	Estimation technique*	Rho
Current expenditures per pupil	$\ln(\mathrm{CUREXP}) = -1.836 + 0.640\ln(\mathrm{PCI}) + 0.591\ln(\mathrm{SGRANT})$ (-1.39) (2.73) (4.63) $-\ 0.334\ln(\mathrm{ADAPOP})$ (-2.88)	0.997	1.918	AR1	0.354 (1.90)
Average annual salaries	$\mathrm{SALARY} = -8903.8 + 4.18\mathrm{CUREXP} + 130680\mathrm{ADAPOP}$ (-2.96) (16.94) (9.84) $+\ 0.00075\mathrm{DIFADA1}$ (3.69)	0.985	1.417	AR1	0.720 (4.62)
Education revenue receipts from state sources per capita	$\mathrm{SGRANT} = -125.8 + 0.31\mathrm{PERTAX1} + 0.28\mathrm{BUSTAX1}$ (-4.14) (1.73) (2.21) $+\ 718\mathrm{ADAPOP} - 13.3\mathrm{ININCR}$ (2.76) (-3.45)	0.991	1.977	OLS	

*OLS = Ordinary Least Squares. AR1 is an estimation procedure for correcting the problem of first-order autocorrelation. Specifically, the maximum likelihood procedure of the statistical program RATS was used to estimate rho. For a general discussion of the problem of autocorrelation, and the methods to correct it, see Johnston (1972), chapter 8. For a discussion of the method used to forecast in the presence of autocorrelation, see G. Judge, W. Hill, R. Griffiths, H. Lutkepohl, and T. Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, pages 315–318.

NOTES: The sample size for revenue receipts from state sources is 30. The sample size for current expenditures is 31. The sample size for teacher salaries is 32. Numbers in parentheses are t-statistics. $\hat{R}^2$ = Coefficient of determination, adjusted for degrees of freedom. For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252. (This table prepared August 1992.)

A6. Expenditures of Institutions of Higher Education

A total of eight higher education expenditure models were estimated: one current-fund expenditure model and one educational and general expenditure model for each of the four types of higher education institutions--public 4-year; public 2-year; private 4-year; and private 2-year. For all the sectors, except private 2-year, econometric techniques were used. Due to the lack of a consistent database for private 2-year schools, exponential smoothing, which requires fewer observations, was used.

The higher education econometric models were selected on the basis of their statistical properties, such as the coefficients of determination (R^2), the t-statistics of the variables, the Durbin-Watson statistic, and residual plots. These econometric models will yield good forecasting results only if the relationships that existed among the variables in the past continue throughout the projection period.

Higher Education Institutions Expenditure Models

Similar econometric models were developed for three types of institutions. While there has been significantly less work by economists studying the factors influencing higher education finance data than those influencing elementary and secondary finance data, there have been some valuable studies. This body of work was used in building these models.

In Chapter 7, some of the factors influencing the level of expenditures were discussed. These were: (1) the state of the economy; (2) the inflation rate; and (3) enrollments. The state of the economy should affect the level of expenditures as it will influence the amount of money available for both tuition and government revenues for higher education institutions. In periods of rapidly changing inflation, officials at institutions of higher education may have a difficult time anticipating the rapid changes in price levels. The increases in enrollments should affect the amount to be available per student with less money for each student.

Each of the models presented here contains variables measuring at least two of the three factors mentioned above. Either the disposable income per capita or the revenues of state and local governments per capita were used to measure the state of the economy. Two measures of the inflation rate were considered: the rate of change in the inflation rate; or a dummy for years with inflation rates greater than 8 percent. In each equation, an enrollment variable was included.

For each dependent variable, a number of alternative specifications were examined. In each case, the choice of the final specification was made after considering such factors as the coefficients of determination, the t-statistics of the variables, residual plots, and ex-post mean absolute percent errors. The final specification of each model has the dependent variables and some of the independent variables as first differences. Linear and log-linear specifications were also examined.

The Public 4-Year Institutions Expenditure Models

The public 4-year institutions current-fund expenditure model is:

$$\begin{aligned} \text{DPUTCUR4} &= b_0 + b_1\text{DSTREV1} + b_2\text{DPUFTE4} \\ &\quad + b_3\text{DUMMY} \end{aligned}$$

where:

DPUTCUR4 is the change in current-fund expenditures per student in full-time-equivalent (FTE) enrollment in public 4-year institutions in constant 1990–91 dollars;

DSTREV1 is the change in the sum of personal tax and nontax receipts to state and local governments and indirect business taxes and tax accruals, excluding property taxes, to state and local governments, per capita, in constant 1990–91 dollars lagged one year;

DPUFTE4 is the change in FTE enrollment in public 4-year institutions; and

DUMMY is a dummy variable equaling 1 when the inflation rate is greater than 8 percent and 0 otherwise.

This model and the other econometric expenditure models were estimated using a sample period from 1968–69 to 1989–90. Ordinary least squares was used to estimate all the public institution models.

The results for this model are on table A6.1. Each variable affects current-fund expenditures in a logical fashion. The more revenues which state and local governments receive, the more expenditures they can make for public institutions of higher education. In a year with high inflation (DUMMY equals 1), current-fund expenditures in constant dollars are lower than they would have been otherwise. The more students in public 4-year institutions, the less money to be spent per student.

Three projections were produced: the middle alternative set of projections, the low alternative set of projections, and the high alternative set of projections. Each set of projections is based on a different set of assumptions for the revenues of state and local governments per capita. The middle alternative set of projections for the revenues of state and local governments per capita comes from DRI/McGraw-Hill's (DRI) trend scenario. In this scenario, the revenues of state and local governments per capita increase at rates between 1.7 and 4.8 percent. The low alternative set of projections is from DRI's pessimistic scenario, and the high set of projections for the high alternative scenario is from DRI's optimistic scenario. In the low scenario, the revenues of state and local governments per capita increase at rates between 1.5 and 5.1 percent and in the high scenario, the revenues of state and local governments per capita increase at rates between 2.1 and 5.0 percent.

Projections for total current-fund expenditures were made by multiplying the projections for current-fund expenditures per student in FTE enrollment by projections for FTE enrollment. Current dollar projections were produced by multiplying the constant dollar projections by projections for the Consumer Price Index. All the higher education total expenditure projections and all the current dollar projections were calculated in similar fashion.

A model for educational and general expenditures of public 4-year institutions was developed using the same variables as the current-fund expenditure model. The model is:

$$\text{DPUED4} = b_0 + b_1\text{DSTREV1} + b_2\text{DPUFTE4} + b_3\text{DUMMY}$$

where:

DPUED4 is the change in educational and general expenditures per student in FTE enrollment in public 4-year institutions in constant 1990–91 dollars.

As with current-fund expenditures, each variable affects expenditures in the expected way.

The Public 2-Year Institutions Expenditure Models

The public 2-year institutions current-fund expenditure model has a form similar to the public 4-year institutions current-fund expenditure model except that the public 2-year institutions model does not contain any inflation variables. The model is:

$$\text{DPUTCUR2} = b_0 + b_1\text{DSTREV1} + b_2\text{DPUFTE2}$$

where:

DPUTCUR2 is the change in current-fund expenditures per student in FTE enrollment in public 2-year institutions in constant 1990–91 dollars; and

DPUFTE2 is the change in FTE enrollment in public 2-year institutions.

The results for this model are on table A6.1. Again, the DSTREV1 has the expected positive effect on expenditures and the FTE enrollment variable has the expected negative impact.

The public 2-year institutions educational and general expenditure model is virtually identical to its current-fund expenditures counterpart. It is:

$$\text{DPUED2} = b_0 + b_1\text{DSTREV1} + b_2\text{DPUFTE2}$$

where:

DPUED2 is the change in educational and general expenditures per student in FTE enrollment in public 2-year institutions in constant 1990–91 dollars.

The Private 4-Year Institutions Expenditure Models

The private 4-year institutions current-fund expenditure model is:

$$\text{DPRTCUR4} = b_0 + b_1\text{DPCI} + b_2\text{DPRFTE4} + b_3\text{ININCR}$$

where:

DPRTCUR4 is the change in current-fund expenditures per student in FTE enrollment in private 4-year institutions in constant 1990–91 dollars;

DPRFTE4 is the change in FTE enrollment in private 4-year institutions to the population; and

ININCR is the rate of change in the inflation rate measured by the Consumer Price Index.

The model was estimated using a method for correcting for autocorrelation—the maximum likelihood search procedure of the program Regression Analysis of Time Series (RATS).

The three alternative sets of projections for current-fund expenditures were produced using varying assumptions about the growth paths for disposable income and the rate of change in the inflation rate measured by the Consumer Price Index.

The middle set of projections for disposable income is from DRI's trend scenario. In this scenario, disposable income per capita rises each year from 1992–93 to 2002–2003 at rates between 1.0 and 2.3 percent.

The low set of projections are from DRI's pessimistic scenario. In the pessimistic scenario, disposable income per capita increases at rates between 0.5 and 2.8 percent during the period from 1992–93 to 2002–2003.

The high set of projections are from DRI's optimistic scenario. In this scenario, disposable income per capita rises each year from 1992–93 to 2002–2003 at rates between 1.2 and 2.4 percent.

The three alternative sets of projections are also based on alternative projections for the inflation rate. The projections for the inflation rate are also from DRI. For the forecast period, they range from 3.4 percent to 4.5 percent for the middle alternative, 3.1 percent to 6.4 percent for the low alternative, and 2.9 percent to 3.9 percent for the high alternative.

The private 4-year institutions educational and general expenditure model is:

$$DPRIED4 = b_0 + b_1 DPCI + b_2 DPRFTE4 + b_3 ININCR$$

where:

DPRIED4 is the change in educational and general expenditures per student in FTE enrollment in private 4-year institutions in constant 1990–91 dollars.

The Private 2-Year Institutions Expenditure Models

Unlike the other higher education variables, econometric methods were not used, for either private 2-year current-fund expenditures or private 2-year educational and general expenditures. This was due to a change in the sample universe for private 2-year institutions. The time period for which the private 2-year universe is relatively consistent, from 1982–83 to 1989–90, has only eight observations. This is too short a time period for econometric techniques, so another means of projecting private 2-year institution expenditures was required. Hence, exponential smoothing, which can operate with only eight observations, was used.

Both current-fund expenditures per student and educational and general expenditures per student were modeled using single exponential smoothing. To do this, the forecasting package Forecast Pro was used. In each case, a smoothing constant of 1.0, which places all the emphasis on the last value, was used.

The higher education expenditure variables are interrelated. For instance, there is the relationship between current-fund expenditures and educational and general expenditures described in Chapter 7. One exercise was conducted to see if the relationships which held previously also held for the projection period.

The ratio of current-fund expenditures in private institutions to current-fund expenditures in all institutions was calculated. The ratios for the projection period were within the upper and lower limits of the period from 1969–70 to 1989–90 suggesting that these projections are consistent.

Projection Accuracy

This is the second time in the past ten years that *Projections of Education Statistics* has contained projections of higher education expenditure data. The other edition was the *Projections of Education Statistics to 2000*. The projected values for 1986–87 through 1989–90 which appeared in *Projections of Education Statistics to 2000* can be compared to the actual values. Those projections were developed using different methodology than those presented here.

For all institutions in total, the projection for current-fund expenditures was 3.6 percent lower than the actual value for 1986–87, 3.5 percent lower than the actual value for 1987–88, 2.5 percent lower than the actual value for 1988–89, and 5.6 percent lower than the actual value for 1989–90.

For public 4-year institutions, the projection for current-fund expenditures was 3.6 percent lower than the actual value for 1986–87, 2.2 percent lower than the actual value for 1987–88, 1.1 percent lower than the actual value for 1988–89, and 4.4 percent lower than the actual value for 1989–90.

For public 2-year institutions, the projection for current-fund expenditures was 2.1 percent higher than the actual value for 1986–87, 5.2 percent higher than the actual value for 1987–88, 4.3 percent higher than the actual value for 1988–89, and 0.8 percent higher than the actual value for 1989–90.

For private 4-year institutions, the projection for current-fund expenditures was 5.0 percent lower than the actual value for 1986–87, 7.7 percent lower than the actual value for 1987–88, 6.6 percent lower than the actual value for 1988–89, and 9.4 percent lower than the actual value for 1989–90.

Sources of Data

The current-fund expenditure data and the educational and general expenditure data are from the "Financial Statistics of Institutions of Higher Education" and the Integrated Postsecondary Education Data System (IPEDS), "Finance" surveys of the National Center for Education Statistics (NCES). One manipulation of the educational and general expenditures numbers was required. From 1968–69 to 1973–74, student-aid expenditures were a separate component of current-fund expenditures. From 1974–75 on, scholarships and fellowships have been a component of educational and general expenditures. Hence, for the period 1968–69 to 1973–74, student aid was added to the published numbers for educational and general expenditures.

The full-time-equivalent (FTE) enrollment data are from the "Fall Enrollment in Colleges and Universities" surveys of NCES. The FTE enrollment figures for 1968–69, 1969–70, and 1970–71 were estimated using part-time and full-time enrollment data. Full-time equivalent enrollment was derived by adding one-third of the part-time students to the number of full-time students.

Both the past values and the projected values for disposable income, the revenues of state and local governments per capita, and the population, were from DRI's "Off-line U.S. Economic Service: Long-term Option." The values for the Consumer Price Index, which were used for adjusting the higher education finance data, and the implicit price deflator for personal consumption expenditures, which was used for adjusting disposable income per capita, were also from DRI.

The Higher Education Price Index was considered as a replacement for the Consumer Price Index for placing the higher education expenditures in constant dollars. As projections of the price index are required for placing the forecasts into current dollars, and as there are no projections of the Higher Education Price Index, the Consumer Price Index was used.

The values of all of the variables from DRI were placed in academic-year terms. The data were available in quarterly format so the academic-year numbers were calculated by taking the average of the last 2 quarters of 1 year with the first 2 of the next year.

Table A6.1.—Equations for current-fund expenditures per student in full-time equivalent enrollment and educational and general expenditures per student in full-time equivalent enrollment in public 4-year institutions, public 2-year institutions, and private 4-year institutions

Dependent variable		Equation	$\bar{R}^2$	Durbin-Watson statistic	Estimation technique*	Rho
Current-fund expenditures per student in public 4-year institutions	DPUTCUR4	= 391 + 2.23DSTREV1 - 0.003DPUFTE4 (4.29) (1.91) (-5.12) - 321DUMMY (-3.06)	0.741	1.92	OLS	
Current-fund expenditures per student in public 2-year institutions	DPUTCUR2	= 14.5 + 3.42DSTREV1 - 0.001DPUFTE2 (0.30) (4.54) (-3.56)	0.732	2.20	OLS	
Current-fund expenditures per student in private 4-year institutions	DPRTCUR4	= 651 + 0.46DPCI - 0.012DPRFTE4 (3.58) (1.91) (-5.86) - 609.5ININCR (-4.86)	0.817	2.09	AR1	0.71 (4.0)
Educational and general expenditures per student in public 4-year institutions	DPUED4	= 350 + 1.68DSTREV1 - 0.003DPUFTE4 (3.80) (1.42) (-5.41) - 330DUMMY (-3.11)	0.736	1.63	OLS	
Educational and general expenditures per student in public 2-year institutions	DPUED2	= 2.65 + 3.53DSTREV1 - 0.0012DPUFTE2 (0.05) (4.26) (-2.53)	0.662	1.90	OLS	
Educational nd general expenditures per student in private 4-year institutions	DPRIED4	= 228.3 + 0.56DPCI - 0.06DPRFTE4 (1.30) (1.54) (-1.81) - 558.3ININCR (-2.8)	0.557	2.18	AR1	0.45 (2.86)

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*OLS = Ordinary Least Squares. AR1 is an estimation procedure for correcting the problem of first-order autocorrelation. Specifically, the maximum likelihood procedure of the statistical program RATS was used to estimate rho. For a general discussion of the problem of autocorrelation, and the methods to correct it, see Johnston (1972), chapter 8. For a discussion of the method used to forecast in the presence of autocorrelation, see G. Judge, W. Hill, R. Griffiths, H. Lutkepohl, and T. Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, pages 315–318.

NOTES: The sample size in for each case is 22. Numbers in parentheses are t-statistics. $\bar{R}^2$ = Coefficient of determination, adjusted for degrees of freedom. For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252. (This table prepared June 1992.)

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Appendix B

Supplementary Tables

Table B1.—Preprimary school-age populations (U.S. Census projections, Middle Series): 50 States and D.C., 1978 to 2003

(In thousands)

Year (July 1)	3 years old	4 years old	5 years old	3-5 years old
1978	3,117	3,091	3,156	9,364
1979	3,077	3,175	3,092	9,344
1980	3,240	3,129	3,181	9,550
1981	3,270	3,281	3,135	9,686
1982	3,378	3,311	3,285	9,974
1983	3,505	3,419	3,313	10,237
1984	3,562	3,546	3,421	10,529
1985	3,608	3,604	3,548	10,760
1986	3,625	3,650	3,605	10,880
1987	3,560	3,668	3,651	10,879
1988	3,678	3,604	3,671	10,953
1989	3,710	3,721	3,605	11,036
1990	3,659	3,698	3,679	11,036
1991	3,718	3,717	3,702	11,137
Projected				
1992	3,814	3,780	3,724	11,318
1993	3,988	3,878	3,787	11,653
1994	3,992	4,052	3,884	11,928
1995	3,933	4,058	4,058	12,049
1996	3,887	3,996	4,062	11,945
1997	3,855	3,950	4,001	11,806
1998	3,826	3,919	3,956	11,701
1999	3,800	3,888	3,924	11,613
2000	3,780	3,862	3,894	11,536
2001	3,765	3,842	3,869	11,476
2002	3,757	3,828	3,849	11,434
2003	3,754	3,820	3,835	11,409

* Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1988," *Current Population Reports*, Series P-25, No. 1045, January 1990; "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Orgin: 1988,"*Current Population Reports*, Series P-25, No. 1057, March 1990; and unpublished tabulations. (This table was prepared May 1992.)

Table B2.—School-age populations (U.S. Census projections, Middle Series), ages 5, 6, 5–13, and 14–17 years: 50 States and D.C., 1978 to 2003

(In thousands)

Year (July 1)	5 years old	6 years old	5–13 years old	14–17 years old
1978	3,156	3,343	32,094	16,946
1979	3,092	3,164	31,431	16,611
1980	3,181	3,112	31,095	16,142
1981	3,135	3,192	30,754	15,599
1982	3,285	3,144	30,614	15,041
1983	3,313	3,293	30,410	14,720
1984	3,421	3,321	30,238	14,704
1985	3,548	3,428	30,110	14,865
1986	3,605	3,555	30,351	14,797
1987	3,651	3,612	30,824	14,468
1988	3,671	3,660	31,406	13,983
1989	3,605	3,678	31,835	13,496
1990	3,679	3,561	32,000	13,312
1991	3,702	3,681	31,504	13,424
			Projected	
1992	3,724	3,706	33,010	13,656
1993	3,787	3,728	33,464	13,918
1994	3,884	3,789	33,827	14,411
1995	4,058	3,887	34,372	14,753
1996	4,062	4,059	34,814	15,147
1997	4,001	4,063	35,190	15,442
1998	3,956	4,004	35,594	15,482
1999	3,924	3,957	35,847	15,640
2000	3,894	3,926	36,049	15,734
2001	3,869	3,896	36,202	15,839
2002	3,849	3,871	36,272	16,082
2003	3,835	3,851	36,231	16,297

*Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1988," *Current Population Reports*, Series P-25, No. 1045, January 1990; "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Orgin: 1988,"*Current Population Reports*, Series P-25, No. 1057, March 1990; and unpublished tabulations. (This table was prepared May 1992.)

Table B3.—College-age populations (U.S. Census projections, Middle Series), ages 18, 18–24, 25–29, 30–34, and 35–44 years: 50 States and D.C., 1978 to 2003

(In thousands)

Year (July 1)	18 years old	18–24 years old	25–29 years old	30–34 years old	35–44 years old
1978	4,247	29,622	18,683	16,280	24,437
1979	4,316	30,048	19,178	17,025	25,176
1980	4,243	30,350	19,804	17,822	25,868
1981	4,175	30,428	20,306	18,853	26,460
1982	4,115	30,283	20,865	18,876	28,115
1983	3,946	29,943	21,321	19,281	29,369
1984	3,734	29,391	21,661	19,769	30,619
1985	3,634	28,749	21,892	20,346	31,839
1986	3,562	27,968	22,132	20,847	33,145
1987	3,632	27,334	22,106	21,409	34,382
1988	3,718	26,888	22,008	21,878	35,343
1989	3,794	26,564	21,830	22,218	36,584
1990	3,603	27,038	21,356	21,990	37,845
1991	3,391	26,599	20,844	22,242	39,352
			Projected		
1992	3,311	26,154	20,272	22,319	39,945
1993	3,533	25,863	19,712	22,303	40,836
1994	3,349	25,472	19,278	22,223	41,711
1995	3,505	25,115	19,116	21,930	42,571
1996	3,538	24,760	19,192	21,427	43,372
1997	3,650	24,798	19,075	20,846	43,991
1998	3,837	25,254	18,809	20,275	44,449
1999	3,838	25,789	18,403	19,828	44,720
2000	3,929	26,327	17,955	19,654	44,719
2001	3,938	26,915	17,423	19,725	44,467
2002	3,871	27,281	17,309	19,608	43,946
2003	3,996	27,731	17,443	19,347	43,339

[*] Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1980 to 1988," *Current Population Reports*, Series P-25, No. 1045, January 1990; "U.S. Population Estimates, by Age, Sex, Race, and Hispanic Orgin: 1988,"*Current Population Reports*, Series P-25, No. 1057, March 1990; and unpublished tabulations. (This table was prepared May 1992.)

Table B4.—Average daily attendance (ADA) in public elementary and secondary schools, change in ADA, the population, and ADA as a proportion of the population: 50 States and D.C., 1977–78 to 2002–03

Year ending	ADA[1] (in thousands)	Change in ADA	Population (in millions)	ADA as a proportion of the the population
1978	40,080	-752,410	221.7	0.181
1979	39,076	-1,003,590	224.2	0.174
1980	38,289	-787,089	226.8	0.169
1981	37,704	-585,167	229.2	0.165
1982	37,095	-609,092	231.4	0.160
1983	36,636	-458,784	233.5	0.157
1984	36,363	-272,890	235.6	0.154
1985	36,404	41,283	237.7	0.153
1986	36,523	118,842	239.8	0.152
1987	36,864	340,764	241.9	0.152
1988	37,051	186,840	244.1	0.152
1989	37,268	217,365	246.3	0.151
1990	37,779	510,440	248.8	0.152
1991[2]	38,209	430,042	251.5	0.152
1992[3]	38,779	570,079	253.7	0.153
		Projected		
1993	39,471	692,481	255.9	0.154
1994	40,185	713,680	257.8	0.156
1995	40,955	770,218	259.7	0.158
1996	41,774	819,341	261.6	0.160
1997	42,544	769,291	263.4	0.161
1998	43,129	585,773	265.2	0.163
1999	43,558	428,208	267.0	0.163
2000	43,903	345,718	268.7	0.163
2001	44,171	267,862	270.4	0.163
2002	44,392	220,592	272.1	0.163
2003	44,598	205,762	273.6	0.163

[1] Projections of average daily attendance were made by multiplying the forecasts for enrollment reported earlier in this publication by the average value of the ratio average daily attendance to the enrollment from 1980 to 1989, approximately 0.92 percent.

[2] Average daily attendance is estimated on the basis of past data.

[3] Projected.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*; Common Core of Data survey; and the Early Estimates survey; DRI/McGraw–Hill, 'Off–line U.S. Economic Service: Long–term Option,'; and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1991–92. Copyright 1992 by the National Education Association. All rights reserved.) (This table prepared May 1992.)

Table B5.—Disposable personal income per capita (in constant 1990–91 dollars),[1] with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Disposable personal income per capita		
1978	$13,348	—	—
1979	13,699	—	—
1980	13,599	—	—
1981	13,587	—	—
1982	13,605	—	—
1983	13,655	—	—
1984	14,264	—	—
1985	14,750	—	—
1986	15,071	—	—
1987	15,259	—	—
1988	15,636	—	—
1989	16,105	—	—
1990	16,217	—	—
1991	15,958	—	—
1992[2]	15,991	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	16,267	$16,024	$16,334
1994	16,638	16,426	16,730
1995	16,990	16,883	17,020
1996	17,250	17,150	17,281
1997	17,431	17,291	17,520
1998	17,631	17,470	17,752
1999	17,880	17,707	18,021
2000	18,104	17,940	18,284
2001	18,299	18,126	18,501
2002	18,491	18,313	18,716
2003	18,680	18,491	18,956

[1] Based on the price deflator for personal consumption expenditures, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projected.

SOURCE: DRI/McGraw-Hill, "Off-line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Table B6.—Education revenue receipts from state source per capita (in constant 1990–91 dollars),[1] with alternative projections: 50 States and D.C. 1977–78 to 2002–2003

Year ending	Education revenue receipts from state sources per capita		
1978	$338	—	—
1979	350	—	—
1980	345	—	—
1981	339	—	—
1982	323	—	—
1983	329	—	—
1984	337	—	—
1985	358	—	—
1986	378	—	—
1987	392	—	—
1988	398	—	—
1989	412	—	—
1990	416	—	—
1991[2]	423	—	—
1992[2]	426	—	—
	Middle alternative projections	**Low alternative projections**	**High alternative projections**
1993	438	$420	$446
1994	450	424	470
1995	463	433	497
1996	476	444	522
1997	489	449	537
1998	501	452	552
1999	512	453	565
2000	523	455	579
2001	532	455	592
2002	542	456	605
2003	552	457	619

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projected.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*; Common Core of Data survey; and Early Estimates survey; and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1991–92. Copyright 1992 by the National Education Association. All rights reserved.) (This table prepared May 1992.)

Table B7.—Consumer Price Index (base year = 1990–91), with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Consumer Price Index		
1978	0.467	—	—
1979	0.511	—	—
1980	0.579	—	—
1981	0.646	—	—
1982	0.703	—	—
1983	0.732	—	—
1984	0.760	—	—
1985	0.789	—	—
1986	0.812	—	—
1987	0.831	—	—
1988	0.865	—	—
1989	0.905	—	—
1990	0.948	—	—
1991	1.000	—	—
1992*	1.032	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	1.068	1.067	1.069
1994	1.107	1.102	1.110
1995	1.146	1.137	1.152
1996	1.185	1.181	1.187
1997	1.229	1.241	1.221
1998	1.276	1.308	1.257
1999	1.326	1.382	1.293
2000	1.381	1.465	1.332
2001	1.441	1.558	1.374
2002	1.506	1.658	1.418
2003	1.573	1.765	1.463

*Projected.

SOURCE: DRI/McGraw-Hill "Off-line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Table B8.—Rate of change for the inflation rate based on the Consumer Price Index, with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Rate of change for the inflation rate		
1978	0.158	—	—
1979	0.394	—	—
1980	0.412	—	—
1981	–0.122	—	—
1982	–0.251	—	—
1983	–0.516	—	—
1984	–0.119	—	—
1985	0.057	—	—
1986	–0.260	—	—
1987	–0.226	—	—
1988	0.826	—	—
1989	0.128	—	—
1990	0.027	—	—
1991	0.153	—	—
1992*	–0.412	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	0.087	0.047	0.103
1994	0.036	–0.033	0.088
1995	–0.040	–0.037	–0.033
1996	–0.029	0.246	–0.200
1997	0.097	0.280	–0.019
1998	0.038	0.084	–0.003
1999	0.024	0.043	–0.018
2000	0.040	0.056	0.027
2001	0.066	0.058	0.066
2002	0.026	0.016	0.025
2003	–0.010	0.001	–0.015

*Projected.

SOURCE: DRI/McGraw–Hill "Off–line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Table B9.—Personal tax and nontax payments to state and local governments, per capita (in constant 1990–91 dollars),[1] with alternative projections: 50 States and D.C. 1977–78 to 2002–2003

Year ending	Personal tax and nontax payments per capita		
1978	$421	—	—
1979	418	—	—
1980	407	—	—
1981	403	—	—
1982	405	—	—
1983	418	—	—
1984	461	—	—
1985	483	—	—
1986	499	—	—
1987	539	—	—
1988	537	—	—
1989	559	—	—
1990	574	—	—
1991	567	—	—
1992[2]	572	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	595	$584	$601
1994	621	610	628
1995	646	637	652
1996	673	661	682
1997	695	682	707
1998	715	704	729
1999	736	725	752
2000	753	744	774
2001	770	760	794
2002	787	776	815
2003	804	792	837

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[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projected.

SOURCE: DRI/McGraw-Hill "Off-line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Table B10.—Indirect business taxes and nontax accruals, excluding property taxes, for state and local governments, per capita (in constant 1990–91 dollars),[1] with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Indirect business taxes and nontax accruals per capita		
1978	$778	—	—
1979	782	—	—
1980	752	—	—
1981	740	—	—
1982	726	—	—
1983	741	—	—
1984	806	—	—
1985	842	—	—
1986	882	—	—
1987	897	—	—
1988	906	—	—
1989	909	—	—
1990	916	—	—
1991	906	—	—
1992[2]	906	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	$940	$927	$948
1994	988	978	997
1995	1,030	1,017	1,039
1996	1,050	1,033	1,063
1997	1,063	1,045	1,081
1998	1,079	1,057	1,098
1999	1,094	1,071	1,119
2000	1,109	1,085	1,141
2001	1,124	1,097	1,161
2002	1,140	1,108	1,182
2002	1,158	1,123	1,208

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[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projected.

SOURCE: Data Resources Incorporated, McGraw-Hill, "Off-line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Table B11.—Sum of personal tax and nontax payments and indirect business taxes and tax accruals, excluding property taxes, for state and local governments, per capita (in constant 1990–91 dollars),[1] with alternative projections: 50 States and D.C., 1977–78 to 2002–2003

Year ending	Tax and and nontax payments per capita		
1978	$1,199	—	—
1979	1,201	—	—
1980	1,159	—	—
1981	1,143	—	—
1982	1,130	—	—
1983	1,160	—	—
1984	1,266	—	—
1985	1,326	—	—
1986	1,381	—	—
1987	1,436	—	—
1988	1,443	—	—
1989	1,467	—	—
1990	1,489	—	—
1991	1,473	—	—
1992[2]	1,478	—	—
	Trend alternative projections	**Pessimistic alternative projections**	**Optimistic alternative projections**
1993	1,535	$1,511	$1,548
1994	1,608	1,588	1,625
1995	1,676	1,654	1,691
1996	1,723	1,695	1,745
1997	1,758	1,727	1,787
1998	1,794	1,761	1,827
1999	1,830	1,796	1,871
2000	1,862	1,829	1,915
2001	1,894	1,857	1,955
2002	1,927	1,884	1,997
2002	1,962	1,915	2,045

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Projected.

SOURCE: DRI/McGraw-Hill "Off-line U.S. Economic Service: Long-term Option." (This table prepared May 1992.)

Appendix C

Data Sources

Sources and Comparability of Data

The information in this report was obtained from many sources, including Federal and state agencies, private research organizations, and professional associations. The data were collected by many methods, including surveys of a universe (such as all colleges) or of a sample, and compilations of administrative records. Care should be used when comparing data from different sources. Differences in procedures, such as timing, phrasing of questions, and interviewer training mean that the results from the different sources are not strictly comparable. More extensive documentation of one survey's procedures than of another's does not imply more problems with the data, only that more information is available.

Accuracy of Data

The accuracy of any statistic is determined by the joint effects of "sampling" and "nonsampling" errors. Estimates based on a sample will differ from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. Besides sampling errors, both surveys, universe and sample, are subject to errors of design, reporting, processing, and errors due to nonresponse. To the extent possible, these nonsampling errors are kept to a minimum by methods built into the survey procedures. In general, however, the effects of nonsampling errors are more difficult to gauge than those produced by sampling variability.

Sampling Errors

The standard error is the primary measure of sampling variability. It provides a specific range—with a stated confidence—within which a given estimate would lie if a complete census had been conducted. The chances that a complete census would differ from the sample by less than the standard error are about 68 out of 100. The chances that the difference would be less than 1.65 times the standard error are about 90 out of 100; that the difference would be less than 1.96 times the standard error, about 95 out of 100; and that it would be less than 2.58 times as large, about 99 out of 100.

The standard error can help assess how valid a comparison between two estimates might be. The standard error of a difference between two sample estimates that are uncorrelated is approximately equal to the square root of the sum of the squared standard errors of the estimates. The standard error (se) of the difference between sample estimate "a" and sample estimate "b" is:

$$se_{a-b} = (se_a^2 + se_b^2)^{1/2}$$

Note that most of the standard errors in subsequent sections and in the original documents are approximations. That is, to derive estimates of standard errors that would be applicable to a wide variety of items and could be prepared at a moderate cost, a number of approximations were required. As a result, most of the standard errors presented provide a general order of magnitude rather than the exact standard error for any specific item.

Nonsampling Errors

Both universe and sample surveys are subject to nonsampling errors. Nonsampling errors are of two kinds—random and nonrandom. Random nonsampling errors may arise when respondents or interviewers interpret questions differently, when respondents must estimate values, or when coders, keyers, and other processors handle answers differently. Nonrandom nonsampling errors result from total nonresponse (no usable data obtained for a sampled unit), partial or item nonresponse (only a portion of a response may be usable), inability or unwillingness on the part of respondents to provide information, difficulty interpreting questions, mistakes in recording or keying data, errors of collection or processing, and overcoverage or undercoverage of the target universe. Random nonresponse errors usually, but not always, result in an understatement of sampling errors and thus an overstatement of the precision of survey estimates. Because estimating the magnitude of nonsampling errors would require special experiments or access to independent data, these magnitudes are seldom available.

To compensate for suspected nonrandom errors, adjustments of the sample estimates are often made. For example, adjustments are frequently made for nonresponse, both total and partial. An adjustment made for either type of nonresponse is often referred to as an imputation, that is, substitution of the "average" questionnaire response for the nonresponse. Imputations are usually made separately within various groups of sample members that have similar survey characteristics. Imputation for item nonresponse is usually made by substituting for a missing item the response to that item of a respondent having characteristics that are similar to those of the nonrespondent.

Although the magnitude of nonsampling errors in the data used in this *Projections of Education Statistics* is frequently unknown, idiosyncrasies that have been identified are noted on the appropriate tables.

Federal Agency Sources

National Center for Education Statistics (NCES)

Common Core of Data

NCES uses the Common Core of Data (CCD) survey to acquire and maintain statistical data on the 50 states, the District of Columbia, and the outlying areas from the universe of state-level education agencies. Information about staff and students is collected annually at the school, LEA (local education agency or school district), and state levels. Information about revenues and expenditures is also collected at the state level.

Data are collected for a particular school year (July 1 through June 30) by survey instruments sent to the states by October 15 of the subsequent school year. States have 2 years in which to modify the data originally submitted.

Since the CCD is a universe survey, the CCD information in *Projections of Education Statistics* is not subject to sampling error. However, nonsampling error could come from two sources—nonreturn and inaccurate reporting. Almost all of the states submit the six CCD survey instruments each year, but there are many delays in submitting data and the submissions are sometimes incomplete.

Understandably, when 57 education agencies compile and submit data for over 85,000 public schools and approximately 15,000 local school districts, misreporting can occur. Typically, this results from varying interpretation of NCES definitions and differing recordkeeping systems. NCES attempts to minimize these errors by working closely with the Council of Chief State School Officers (CCSSO) and its Committee on Evaluation and Information Systems (CEIS).

The state education agencies report data to NCES from data collected and edited in the regular reporting cycles for which NCES reimburses them. NCES encourages the agencies to incorporate into their own survey systems the NCES items they do not collect so those items will also be available for the subsequent CCD survey. Over time, this has meant fewer missing data cells in each state's response, reducing the need to impute data.

NCES subjects data from the education agencies to a comprehensive edit. Where data are determined to be inconsistent, missing, or out of range, NCES asks the education agencies for verification. NCES-prepared state summary forms are returned to the state education agencies for verification. States are also given an opportunity to revise their state-level aggregates from the previous survey cycle.

Questions concerning the Common Core of Data can be directed to:

John Sietsema
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Public School Early Estimates System. The Public School Early Estimates System is designed to allow NCES to report selected key statistics early in the school year. Statistics include the number of students in membership, teachers, and high school graduates, and total revenues and expenditures. These estimates are either preliminary actual counts for individual states, estimates derived by the states for NCES, or imputed values developed by NCES using a combination of state-specific and national data.

Forty-seven states and the District of Columbia participated in the 1991 survey. Estimates reported in this book were provided to NCES by state education agencies and represent the best information available to states at this early stage of the school year. They are, however, subject to revision.

Early in November of each year, a survey form is sent to each state education agency requesting cooperation and specifying when NCES will collect data by telephone. States are contacted during the first week in November, and state estimates are received through the third week in December. Data collected by telephone are checked for reasonableness against prior years' data.

Questions concerning the Public School Early Estimates System can be directed to:

Frank Johnson
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Private School Early Estimates System: 1988–89. The private school early estimates are the first reporting component of the Private School Universe data collection system. In subsequent years, the statistical information will be collected from all private schools in the NCES universe, and the early estimates will be based on a subsample of that universe.

Early in October 1988, questionnaires were mailed to a national probability sample of 1,167 private elementary and secondary schools from a universe of approximately 30,000 private schools. Telephone followup of nonrespondents was initiated in late October, and data collection was completed in late November. The overall response rate was 94 percent: 978 of the 1,035 eligible schools. Some 132 of the original 1,167 schools in the sample were determined to be out of scope. While this survey was not designed specifically to yield an estimate of the number of private schools, the number of out-of-scope schools identified in this survey resulted in a weighted estimate of approximately 26,300 private schools.

The sampling frame used for the survey was composed of two nonoverlapping frames: the NCES list frame of approximately 24,000 eligible schools, and an area frame developed by the Census Bureau for 75 Primary Sampling Units (PSUs). The area frame yielded a sample size of 523 schools for the Schools and Staffing Survey (SASS). The private school early estimates area sample was drawn from the SASS area sample. The sample from the area frame was sorted by level of school, by religious orientation class within school level, then by PSU within religious orientation class, and finally by student membership within PSU.

The sample from the list frame was stratified by level of school (elementary, secondary, combined, and other) and religious orientation (Catholic, other religious, and nonsectarian), and within strata, schools were further sorted by Office of Education regions, and by student membership size within region. Each school in the sorted frame was assigned a sampling measure of size equal to the square root of student membership, and samples were selected with probabilities proportionate to size from each orientation/level stratum.

The survey data were weighted to reflect the sampling rates (probability of selection) and were adjusted for nonresponse. Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as jackknife. The standard errors for private school early estimates for school years 1987–88 and 1988–89 are shown in the table below.

Students (1988–89)	Teachers (1988–89)	Graduates (1987–88)
96,779.9	7,624.7	9,605.4

Nonsampling errors may include such things as differences in the respondents' interpretation of the meaning to the questions, differences related to the particular time the survey was conducted, or errors in data preparation. During the design of the survey and survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire was pretested with respondents like those who completed the survey, and the questionnaire and instructions were extensively reviewed by NCES and representatives of private school associations attending the NCES private school data users meeting. Manual and machine editing of the questionnaires was conducted to check the data for accuracy and consistency. Extensive telephone followup was conducted for missing or inconsistent items; data were keyed with 100-percent verification.

Undercoverage in the list and area frames is another possible source of nonsampling error. The area frame was used to complement the list frame through the identification of schools missing from the list frame. As the Early Estimates System and the Private School Universe data collection system develop, efforts will be directed towards updating the universe list and identifying and minimizing sources of undercoverage in both the list and area frames.

Questions concerning the Private School Early Estimates System can be directed to:

Marilyn M. McMillen
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Private School Early Estimates System: 1989–90. This is the second in a series of early estimates for private elementary and secondary education. These early estimates are key statistics reported early in the school year and include the numbers of teachers, students, and high school graduates for private elementary and secondary schools. In subsequent years, the statistical information will be collected from all private schools in the NCES universe, and the early estimates will be based on a subsample of that universe.

Early in October 1989, questionnaires were mailed to a national probability sample of 1,169 private elementary and secondary schools from a universe of approximately 27,000 private schools. Telephone followup of nonrespondents was initiated in late October, and data collection was completed in late November. The overall response rate was 95 percent: 986 of the 1,042 eligible schools. Some 127 of the original 1,167 schools in the sample were determined to be out of scope. While this survey was not designed specifically to yield an estimate of the number of private schools, the number of out-of-scope schools identified in this survey resulted in a weighted estimate of approximately 26,645 private schools.

The sampling frame used for the survey was composed of two nonoverlapping frames: the NCES list frame of approximately 24,000 eligible schools, and an area frame developed by the Census Bureau for 75 Primary Sampling Units (PSUs). The area frame yielded a sample size of 523 schools for the Schools and Staffing Survey (SASS). The private school early estimates area sample was drawn from the SASS area sample. The sample from the area frame was sorted by level of school, by religious orientation class within school level, then by PSU within religious orientation class, and finally by student membership within PSU.

The sample from the list frame was stratified by level of school (elementary, secondary, combined, and other) and religious orientation (Catholic, other religious, and nonsectarian), and within strata, schools were further sorted by Census regions, and by student membership size within region. Each school in the sorted frame was assigned a sampling measure of size equal to the square root of student membership. The sample design for the list frame was similar, differing in two ways from the design for the area frame. First, stratification by level of school yielded four, rather than three categories: elementary, secondary, combined, and other. Second, the measure of size was simply the square root of student membership.

The survey data were weighted to reflect the sampling rates (probability of selection) and were adjusted for nonresponse. Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as balanced repeated replication. The standard errors for private school early estimates for school years 1988–89 and 1989–90 are shown in the table below.

Students (1989–90)	Teachers (1989–90)	Graduates (1988–89)
117,830.9	8,636.1	13,305.6

Nonsampling errors may include such things as differences in the respondents' interpretations of the meaning to the questions, differences related to the particular time the survey was conducted, or errors in data preparation. The survey instrument used in the 1989–90 Early Estimates data collection was developed based on the experiences of the 1988–89 Early Estimates data collection. The form was modified as needed to accommodate one data collection instrument for both the Early Estimates and Universe components of the Private School data collection system. The content of the survey was developed in consultation with representatives of private school associations attending NCES private school data users meetings. The questionnaire and instructions were extensively reviewed by NCES staff. Manual and machine editing of the questionnaires was conducted to check the data for accuracy and consistency. Data were keyed with 100-percent verification.

Undercoverage in the list and area frames is another possible source of nonsampling error. The area frame was used to complement the list frame through the identification of schools missing from the list frame. As the Early Estimates System and the Private School Universe data collection system develop, both the list and area frames will be updated periodically. For the 1989–90 Early Estimates data collection, 1,000 private schools were added to the universe list.

Questions concerning the Private School Early Estimates System can be directed to:

Marilyn M. McMillen
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Private School Early Estimates System: 1990–91. Early in September 1990, questionnaires were mailed to a national probability sample of 1,167 private elementary and secondary schools. Telephone collection of the data began in early October and was completed in mid-October. The overall response rate was 98 percent: 1,098 of the 1,119 eligible schools. Some 48 of the original 1,167 schools in the sample were determined to be out of scope. After adjusting for out-of-scope schools, the weighted estimate of private schools is 24,553.

The sampling frame used for the survey was composed of two nonoverlapping frames: the NCES Private School Survey list of approximately 20,584 eligible schools (the universe list), and an area frame developed by the Census Bureau, consisting of 923 schools identified in 123 sampled geographic areas (Primary Sampling Units or PSUs). The list frame was stratified by level of school (elementary, secondary, combined, other, and unknown) and religious orientation (Catholic, other religious, and nonsectarian); within strata, schools were further sorted by Census region and by student membership size within region. Each school in the sorted frame was assigned a sampling measure of size equal to the square root of student membership.

The area frame is constructed from a sample survey designed to capture those schools not included in the universe list. The 923 schools identified in the sampled areas are weighted to a national estimate of the number of private schools not included in the universe list. This weighted number is then added to the universe count to produce an estimate of the total number of private schools in the United States. For the early estimate, the area frame was stratified by level of school (elementary, secondary, and other) and religious orientation (Catholic, other religious, and nonsectarian). Within strata, schools were further sorted by FIPS (Federal Information Processing Standards) state code, by FIPS county code within states, and by student membership within counties. Samples were selected with probabilities proportionate to size from each stratum. The measure of size used for this purpose was the square root of student membership multiplied by the inverse of the probability of selection of the PSU in which school is located.

A new estimation procedure was used to produce the 1990 private school early estimates. This procedure used the estimates obtained from the entire universe of private schools in the Private School Survey of 1989 and adjusted these estimates for the change reflected in the 1990 early estimates data collections. The steps of this procedure were: (1) obtain Private School Survey (PSS) universe estimates for the data elements desired; (2) adjust PSS estimates for partial and total nonresponse; (3) collect 1990 early estimates data for the data elements; (4) weight the early estimate sample to reflect the sampling rates (probability of selection) and to adjust for total nonresponse separately by the sampling strata and by enrollment; (5) measure the change for these data elements between the PSS and the early estimates data collection for those schools that were in the early estimates sample and had the appropriate data for both 1989 and 1990; and (6) apply the change calculated in step 5 to the data from all of the schools in the PSS universe. Numbers in the tables and text have been rounded. Ratios have been calculated on the actual estimates rather than the rounded values. The 1990 early estimates were adjusted to account for both total and partial nonresponses.

Sample survey data, such as the private school estimates data, are subject to error due to variations in sampling. The standard error is a measure of the variability due to sampling when estimating a statistic. Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as balanced repeated replication. The standard errors for private school early estimates for school years 1989–90 and 1990–91 are shown in the table below.

Students (1990–91)	Teachers (1990–91)	Graduates (1989–90)
96,270.9	7,341.5	15,850.2

Survey estimates are also subject to errors of reporting and errors made in the collection and processing of the data. These errors, called nonsampling errors, can sometimes bias the data. Nonsampling errors may include such things as differences in the respondents' interpretations of the meaning to the questions, differences related to the particular time the survey was conducted, or errors in data preparation. The survey instrument used in the 1990–91 private school early estimates data collection was revised as a result of the experiences of the 1989–90 private school early estimates data collection. The content of the survey was developed in consultation with representatives of private school associations attending NCES meetings for users of private school data. The questionnaire and instructions were reviewed extensively by NCES staff. Manual and machine editing of the questionnaires was conducted to check the data for accuracy and consistency. Data were keyed with 100-percent verification.

Undercoverage in the list and area frames is another possible source of nonsampling error. The area frame was used to complement the list frame through the identification of schools missing from the list frame. As the Private School Early Estimates System and the Private School Survey (the universe data collection) system develop, both the list and area frames will be updated periodically.

Questions concerning the Private School Early Estimates System can be directed to:

Sharon A. Bobbitt
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Private School Early Estimates System: 1991–92. Early in September 1991, questionnaires were mailed to a national probability sample of 1,163 private elementary and secondary schools. Telephone collection of the data began in early October and was completed in mid-October. The overall response rate was 96.5 percent: 1,064 of the 1,103 eligible schools. Some 60 of the original 1,163 schools in the sample were determined to be out of scope. After adjusting for out-of-scope schools, the weighted estimate of private schools is 24,284.

The sampling frame used for the Private School Early Estimates Survey was the 1989–1990 NCES Private School Survey (PSS). This survey collected information on the number of teachers and students in private schools, by school religious orientation and level as well as actual and projected counts of high school graduates. The PSS, and therefore the early estimates survey, uses two nonoverlapping frames: the list frame of approximately 21,515 eligible schools (the universe list), and an area frame developed by the Census Bureau, consisting of 933 schools identified in 124 sampled geographic areas (Primary Sampling Units or PSUs). The area frame is constructed from a sample survey designed to capture those schools not included in the universe list and is repeated every 2 years. The 933 schools identified in the sampled areas are weighted to a national estimate of the number of private schools not included in the universe list. This weighted number is then added to the universe count to produce an estimate of the total number of private schools in the United States.

For the early estimates, the list frame was stratified by level of school (elementary, secondary, combined, other, and unknown) and religious orientation (Catholic, other religious, and nonsectarian); within strata, schools were further sorted by Census region and by student membership size within region. Each school in the sorted frame was assigned a sampling measure of size equal to the square root of student membership.

The area frame was stratified by level of school (elementary, secondary, and other) and religious orientation (Catholic, other religious, and nonsectarian). Within strata, schools were further sorted by FIPS (Federal Information Processing Standards) state code, by FIPS county code within states, and by student membership within counties. Samples were selected with probabilities proportionate to size from each stratum. The measure of size used for this purpose was the square root of student membership multiplied by the inverse of the probability of selection of the PSU in which the school is located.

The list and area samples for the 1991 early estimates were the same as the 1990 early estimate samples.

The estimation procedure used the estimates obtained from the NCES frame of private schools (1989 Private School Survey) and adjusted those estimates for the change reflected in the 1991 early estimates data collections. The steps of this procedure were: 1) obtain Private School Survey (PSS) frame estimates for the data elements desired, adjusting for both partial and total nonresponse; 2) collect 1991 early estimates data for the data elements; 3) weight the early estimate sample to reflect the sampling rates (probability of selection), adjusting for total nonresponse separately by the sampling strata and by enrollment; 4) for each of the data elements, compute the weighted ratio of the 1991 early estimates data and the 1989 PSS data for those schools that reported for both time periods (the change from 1989 to 1991); and 5) multiply the change calculated in step 4 by the appropriate PSS estimate in step 1. Numbers in the tables and text have been rounded. Ratios have been calculated on the actual estimates rather than the rounded values. The 1990 early estimates were adjusted to account for both total and partial nonresponse.

Sample survey data, such as the private school estimates data, are subject to error due to variations in sampling. The standard error is a measure of the variability due to sampling when estimating a statistic. Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as balanced repeated replication. The standard errors for private school early estimates for school years 1990–91 and 1991–92 are shown in the table below.

Students (1991–92)	Teachers (1991–92)	Graduates (1990–91)
80,031.0	8,320.1	13,062.3

Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as balanced repeated replication (BRR)—a technique that splits the sample into several different half-samples. Weight adjusted estimates are computed from the half-samples. Finally, the standard error of the half-sample estimates is used as an approximation for the full-sample standard error.

Survey estimates are also subject to errors of reporting and errors made in the collection and processing of the data. These errors, called nonsampling errors, can sometimes bias the data. While general sampling theory can be used to estimate the sampling variability of an estimate, nonsampling errors are not easy to measure and usually require either an experiment to be conducted as part of the data collection procedure or use of data external to the study.

Nonsampling errors may include such things as differences in the respondents' interpretation of the meaning of the questions, differences related to the particular time the survey was conducted, or errors in data preparation. The content of the survey was developed in consultation with representatives of private school associations attending NCES meetings for users of private school data. The questionnaire and instructions were reviewed extensively by NCES staff. Manual and machine editing of the questionnaires was conducted to check the data for accuracy and consistency. Data were keyed with 100-percent verification.

Undercoverage in the list and area frames is another possible source of nonsampling error. The area frame was used to complement the list frame through the identification of schools missing from the list frame. The area frame represents approximately 20 percent of the total number of private schools. The estimates in this report do not take into account newly opened private schools. As a result, the estimates of students, teachers, and graduates may be biased and lower than the actual numbers. The 1991–92 list and area frame updates to the PSS will be reflected in next year's early estimates, and so new schools will be included in those new estimates. As the Private School Early Estimates System and the Private School Survey (the universe data collection) system develop, both the list and area frames will be updated periodically.

Questions concerning the Private School Early Estimates System can be directed to:

Sharon A. Bobbitt
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) surveys all postsecondary institutions, including universities and colleges, as well as institutions offering technical and vocational education beyond the high school level. This system, which began in 1986, replaces and supplements the Higher Education General Information Survey (HEGIS).

The information presented in this report draws on IPEDS surveys that solicited information concerning institutional characteristics, enrollment, degrees, and finances. The higher education portion of this system is a census of accredited 2- and 4-year colleges. Since these surveys cover all institutions in the universe, the data are not subject to sampling error. However, they are subject to nonsampling error, the sources of which vary with the survey instrument. Each survey will therefore be discussed separately. Information concerning the nonsampling error of the enrollment and degrees surveys is drawn extensively from the HEGIS Post-Survey Validation Study conducted in 1979.

Early Estimates Survey, 1991. The fall 1991 data are based on responses from the 665 institutions on the Early Estimates Panel, a stratified random sample representative of the universe of 3,559 institutions of higher education in the United States in academic year 1990–91. Selected data items from the Integrated Postsecondary Education Data System (IPEDS) "Fall Enrollment" survey, "Completions" survey, and "Finance" survey were requested by telephone from the Early Estimates Representative of each institution in the sample between mid-October and mid-November 1991. The data were edited against previous years' survey responses, where available. The largest discrepancies were resolved with reporting institutions.

The overall institutional response rate for the 1991 "Early Estimates" survey was 98.2 percent. Weighted response rates for the three survey components were: (1) Fall enrollment, 97.4 percent, (2) Completions, 96.1 percent, and (3) Finance, 90.6 percent. The sample weights were adjusted to account for nonresponse. The sample data were then weighted to national estimates using ratio estimation based on fall 1990 universe data from the "Fall Enrollment" survey, academic year 1989–90 universe data from the "Completions" survey, and fiscal year 1989 universe data from the "Finance" survey.

These early estimates are subject to both sampling and nonsampling error. While nonsampling error is difficult to measure, the magnitude of sampling error can be indicated by the confidence interval for an estimate. If all possible samples were surveyed under similar conditions and a 95 percent confidence interval were constructed for each sample, about 95 percent of these intervals would include the true population parameter being estimated. Data for the universe of postsecondary institutions (of which higher education institutions form a subset) in IPEDS will be available in fall 1992.

The standard error for 1990–91 earned degrees (associate and higher) and lower and upper 95 percent confidence limits are shown in the table below.

Estimate)	Lower	Upper
2,003,106	1,986,322	2,019,891

Institutional Characteristics. This survey provided the basis for the universe of institutions in the *Directory of Postsecondary Institutions*, and it is used in all other IPEDS data collection activities. The universe includes institutions that met certain accreditation criteria and offered at least a 1-year program of college-level studies leading toward a degree. All of these institutions were certified as eligible by the U.S. Department of Education's Division of Eligibility and Agency Evaluation. Each fall, institutions listed in the previous year's *Directory* were asked to update a computer printout of their information.

Fall Enrollment. This survey has been part of the IPEDS or HEGIS series since 1966. HEGIS is mainly composed of 4- and 2-year colleges and universities. The enrollment survey response rate was relatively high; the 1990 response rate was 87.2 percent. Major sources of nonsampling error for this survey are classification problems, the unavailability of needed data, interpretation of definitions, the survey due date, and operational errors. Of these, the classification of students appears to be the main source of error. Institutions have problems in correctly classifying first-time freshmen, other first-time students, and unclassified students for both full-time and part-time categories. These problems occur most often at 2-year institutions (private and public) and private 4-year institutions. In 1977–78 HEGIS validation studies, the classification problem led to an estimated overcount of 11,000 full-time students and an undercount of 19,000 part-time students. Although the ratio of error to the grand total was small (less than 1 percent), the percentage of errors was as high as 5 percent for detailed student levels and even higher at certain aggregation levels.

Beginning with fall 1986, the survey system was redesigned with the introduction of IPEDS. The new survey system comprises all postsecondary institutions, but also maintains comparability with earlier surveys by allowing HEGIS institutions to be tabulated separately. The new system also provides for preliminary and revised data releases. This allows NCES flexibility to release early data sets while still maintaining a more accurate final database.

Completions. This survey was part of the HEGIS series throughout its existence. However, the degree classification taxonomy was revised in 1970–71 and 1982–83. Collection of degree data has been maintained through the IPEDS system.

Although information from survey years 1970–71 through 1981–82 is directly comparable, care must be taken if information before or after that period is included in any comparison. Degrees-conferred trend tables arranged by the 1982–83 classification have been added to the *Projections of Education Statistics* to provide consistent data from 1970–71 to 1988–89. Data in this edition on associate degrees are not directly comparable with figures for earlier years. The nonresponse rate does not appear to be a significant source of nonsampling error for this survey. The return rate over the years has been extremely high, with the response rate for the 1989–90 survey at 92.3 percent. Because of the high return rate, nonsampling error caused by imputation was also minimal.

The major sources of nonsampling error for this survey are differences between the HEGIS program taxonomy and taxonomies used by the colleges, classification of double majors and double degrees, operational problems, and survey timing. In the 1979 validation study, these sources of nonsampling error were found to contribute to an error rate of 0.3 percent overreporting of bachelor's degrees and 1.3 percent overreporting of master's degrees. The differences, however, varied greatly among fields. Over 50 percent of the fields selected for the validation study had no errors identified. Categories of fields that had large differences were business and management, education, engineering, letters, and psychology. It was also shown that differences in proportion to the published figures were less than 1 percent for most of the selected fields that had some errors. Exceptions to these were: master's and doctoral programs in labor and industrial relations (20 percent and 8 percent); bachelor's and master's programs in art education (3 percent and 4 percent); bachelor's and doctoral programs in business and commerce, and in distributive education (5 percent and 9 percent); master's programs in philosophy (8 percent); and doctoral programs in psychology (11 percent).

Financial Statistics. This survey was part of the HEGIS series and has been continued under the IPEDS system. Changes were made in the financial survey instruments in fiscal years (FY) 1976, 1982, and 1987. The FY 76 survey instrument contained numerous revisions to earlier survey forms and made direct comparisons of line items very difficult. Beginning in FY 82, Pell Grant data were collected in Federal restricted grants and contracts revenues and restricted scholarships and fellowships expenditures. The introduction of the Integrated Postsecondary Education Data System (IPEDS) in the FY 87 survey included several important changes to the survey instrument and data processing procedures. While these changes were significant, considerable effort has been made to present only comparable information on trends in this report and to note inconsistencies. Finance tables for this publication have been adjusted by subtracting the largely duplicative Pell Grant amounts from the later data to maintain comparability with pre-FY 82 data.

Possible sources of nonsampling error in the financial statistics include nonresponse, imputation, and misclassification. The response rate has been about 85 to 90 percent for most of the years reported. The response rate for the FY 1989 survey was 83.5 percent.

Two general methods of imputation were used in HEGIS. If the prior years' data were available for a nonresponding institution, these data were inflated using the Higher Education Price Index and adjusted according to changes in enrollments. If there were no data for the previous four years, current data were used from Peer institutions selected for location (state or region), control, level, and enrollment size of institution. In most cases, estimates for nonreporting institutions in IPEDS were made using data from peer institutions.

Beginning with FY 87, the new system (IPEDS) comprises all postsecondary institutions, but also maintains comparability with earlier surveys by allowing 2- and 4-year HEGIS institutions to be tabulated separately. The finance data tabulated for this publication reflect totals for the HEGIS or higher education institutions only.

To reduce reporting error, NCES used national standards for reporting finance statistics. These standards are contained in *Financial Accounting and Reporting Manual for Higher Education* published in 1990 by the National Association of College and University Business Officers. Definitions and formats in the survey, wherever possible, are consistent with those in this text.

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Bureau of the Census

Current Population Survey

Current estimates of school enrollment, as well as social and economic characteristics of students, are based on data collected in the Census Bureau's monthly survey of about 60,000 households. The monthly Current Population Survey (CPS) sample consists of 729 areas comprising 1,973 counties, independent cities, and minor civil divisions throughout the 50 states and the District of Columbia. The sample was initially selected from the 1980 census files and is periodically updated to reflect new housing construction.

The monthly CPS deals primarily with labor force data for the civilian noninstitutional population (i.e., excluding military personnel and their families living on post and inmates of institutions). In addition, on October of each year, supplemental questions are asked about highest grade completed, level of current enrollment, attendance status, number and types of courses, degree or certificate objective, and type of organization offering instruction for each member of the household. Information on enrollment status by grade is gathered each October.

The estimation procedure used for the monthly CPS data involves inflating weighted sample results to independent estimates of characteristics of the civilian noninstitutional population in the United States by age, sex, and race. These independent estimates are based on statistics from decennial censuses; statistics on births, deaths, immigration, and emigration; and statistics on the population in the armed services. Generalized standard error tables are in the *Current Population Reports*. The data are subject to both nonsampling and sampling errors.

More information is available in the *Current Population Reports*, Series P-20, or by contacting:

Education and Social Stratification Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

School Enrollment. Each October, the Current Population Survey (CPS) includes supplemental questions on the enrollment status of the population 3 years old and over. The main sources of nonsampling variability in the responses to the supplement are those inherent in the survey instrument. The question concerning educational attainment may be sensitive for some respondents who may not want to acknowledge their lack of a high school diploma. The question of current enrollment may not be answered accurately for various reasons. Some respondents may not know current grade information for every student in the household, a problem especially prevalent for households with members in college or in nursery school. Confusion over college credits or hours taken by a student may make it difficult to determine the year in which the student is enrolled. Problems may occur with the definition of nursery school (a group or class organized to provide educational experiences for children) where respondents' interpretations of "educational experiences" vary.

Questions concerning the CPS "School Enrollment" survey may be directed to:

Education and Social Stratification Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Total population estimates. Estimates of the U.S. population shown in this report cover three population definitions: total population including Armed Forces overseas, resident population, and civilian population. Estimates of resident population are consistent with the decennial census of April 1, 1980, and conform to the definition of United States residence applied in that census. The estimates of total population shown are also consistent with the 1980 census, with the addition of the Armed Forces stationed outside the 50 states and the District of Columbia, as reported by the five branches of the Armed Forces in the U.S. Departments of Defense and Transportation. The civilian population is defined as the census-consistent resident population minus Armed Forces stationed within the United States, as reported by the branches of the Armed Forces. The resident population used in these estimates includes residents of the 50 states and the District of Columbia, but excludes resident of the Commonwealth of Puerto Rico, residents of the outlying areas under United States sovereignty or jurisdiction (principally American Samoa, Guam, Virgin Islands of the United States, and

Commonwealth of the Northern Mariana Islands), and other American citizens living overseas. None of the population estimates make any allowance for undercount of United States residents in the census.

Basically, the method by which these estimates were produced consisted of updating a base population as of April 1, 1980, distributed by age, sex, race, and Hispanic origin to the reference date of the estimates, using data on the components of population change: births, deaths, and net immigration. The base population was an adaptation of the 1980 census distribution. We based estimates of births and deaths on data from the National Center for Health Statistics as well as data on deaths from the Health Care Finance Administration. The Immigration and Naturalization Service provided data on legal immigration of non-U.S. citizens. Statistics on refugees from Southeast Asia, Cuba, Haiti, and the U.S.S.R. were provided by the Office of Refugee Resettlement. The Puerto Rico Planning Board provided data to estimate the net immigration of persons from Puerto Rico to the 50 states plus the District of Columbia. Data from the Office of Personnel Management and the Department of Defense were used to estimate the migration of other civilian U.S. citizens across the national boundaries. Research conducted at the Bureau of the Census and the Immigration and Naturalization Service provided the basis for estimates of undocumented immigration and emigration of legal residents from the United States.

Questions concerning the "Total Population Estimates" may be directed to:

Population Projections Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Other Sources

National Education Association

Estimates of School Statistics

The National Education Association (NEA) reports teacher, revenue, and expenditure data in its annual publication, *Estimates of School Statistics*. Each year, NEA prepares regression-based estimates of financial and other education statistics and submits them to the states for verification. Generally, about 30 states adjust these estimates based on their own data. These preliminary data are published by NEA along with revised data from previous years. States are asked to revise previously submitted data as final figures become available. The most recent publication contains all changes reported to the NEA.

Some expenditure projections use revised estimates of financial data prepared by NEA because this organization was the most current source. Since expenditure data reported to NCES must be certified for use in Department of Education formula grant programs (such as Chapter I of the Education Consolidation and Improvement Act), NCES data are not available as soon as NEA estimates.

Further information on NEA surveys can be obtained from:

National Education Association—Research
1201 16th Street NW
Washington, DC 20036

DRI/McGraw-Hill

DRI/McGraw-Hill provides an information system that includes more than 125 databases: simulation and planning models; regular publications and special studies; data retrieval and management systems; and access to experts on economic, financial, industrial, and market activities. One service is the DRI U.S. Annual Model Forecast Data Bank, which contains annual projections of the U.S. economic and financial conditions, including forecasts for the federal government, incomes, population, prices and wages, and state and local government, over a long-term (10 to 25-year) forecast period.

Additional information is available from:

DRI/McGraw-Hill
24 Hartwell Avenue
Lexington, MA 02173

Appendix D

Glossary

Data Terms

Associate degree: A degree granted for the successful completion of a subbaccalaureate program of studies, usually requiring at least 2 years (or the equivalent) of full-time college-level study. This term includes degrees granted in a cooperative or work–study program.

Average daily attendance (ADA): The aggregate attendance of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered days in session.

Average daily membership (ADM): The aggregate membership of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered as days in session. The average daily membership for groups of schools having varying lengths of terms is the average of the average daily memberships obtained for the individual schools.

Bachelor's degree: A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or the equivalent) of full-time college-level study. This term includes degrees granted in a cooperative or work–study program.

Classroom teacher: A staff member assigned the professional activities of instructing pupils in self-contained classes or courses, or in classroom situations. Usually expressed in full-time equivalents.

Class size: The membership of a class at a given date.

Cohort: A group of individuals that have a statistical factor in common, for example, year of birth.

College: A postsecondary school that offers a general or liberal arts education, usually leading to an associate, bachelor's, master's, doctor's, or first-professional degree. Junior colleges and community colleges are included in this term.

Constant dollars: Dollar amounts that have been adjusted by means of price and cost indexes to eliminate inflationary factors and allow direct comparison across years.

Consumer Price Index (CPI): This price index measures the average change in the cost of a fixed market basket of goods and services purchased by consumers.

Current dollars: Dollar amounts that have not been adjusted to compensate for inflation.

Current expenditures (elementary/secondary): The expenditures for operating local public schools, excluding capital outlay and interest on school debt. These expenditures include such items as salaries for school personnel, fixed charges, student transportation, school books and materials, and energy costs.

Current expenditures per pupil in average daily attendance: Current expenditures for the regular school term divided by the average daily attendance of full-time pupils (or full-time-equivalency of pupils) during the term. See also *current expenditures* and *average daily attendance*.

Current-fund expenditures (higher education): Money spent to meet current operating costs, including salaries, wages, utilities, student services, public services, research libraries, scholarships and fellowships, auxiliary enterprises, hospitals, and independent operations. Excludes loans, capital expenditures, and investments.

Current Population Survey: See Appendix C, Data Sources.

Disposable personal income: Current income received by persons less their contributions for social insurance, personal tax, and nontax payments. It is the income available to persons for spending and saving. Nontax payments include passport fees, fines and penalties, donations, and tuitions and fees paid to schools and hospitals operated mainly by the government. See also *personal income*.

Doctor's degree: An earned degree carrying the title of doctor. The Doctor of Philosophy degree (Ph.D.) is the highest academic degree and requires mastery within a field of knowledge and demonstrated ability to perform scholarly research. Other doctorates are awarded for fulfilling specialized requirements in professional fields, such as education (Ed.D.), musical arts (D.M.A.), business administration (D.B.A.), and engineering (D.Eng. or D.E.S.). Many doctor's degrees in both academic and professional fields require an earned master's degree as a prerequisite. First-professional degrees, such as M.D. and D.D.S., are not included under this heading.

Educational and general expenditures: The sum of current funds expenditures on instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, and awards from restricted and unrestricted funds.

Elementary school: A school classified as elementary by state and local practice and composed of any span of grades not above grade 8. A preschool or kindergarten school is included under this heading only if it is an integral part of an elementary school or a regularly established school system.

Elementary and secondary schools: As used in this publication, includes only regular schools, that is, schools that are part of state and local school systems and also most not-for-profit private elementary and secondary schools, both religiously affiliated and nonsectarian. Schools not included in this term are subcollegiate departments of institutions of higher education, American residential schools for exceptional children, federal schools for Indians, and federal schools on military posts and other federal installations.

Enrollment: The number of students registered in a given school unit at a given time, generally in the fall of a year.

Expenditures: Charges incurred, whether paid or unpaid, that are presumed to benefit the current fiscal year. For elementary and secondary schools, these include all charges for current outlays plus capital outlays and interest on school debt. For institutions of higher education, these include current outlays plus capital outlays. For government, these include charges net of recoveries and other correcting transactions other than for retirement of debt, investment in securities, or extension of credit. Government expenditures include only external transactions, such as the provision of perquisites or other payments in kind. Aggregates for groups of governments exclude intergovernmental transactions.

Expenditures per pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as average daily attendance or average daily membership.

First-professional degree: A degree that signifies both completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. This degree usually is based on a program requiring at least 2 academic years of work before entrance and a total of at least 6 academic years of work to complete the degree program, including both prior required college work and the professional program itself. By NCES definition, first-professional degrees are awarded in the fields of dentistry (D.D.S or D.M.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Phar.), podiatric medicine (D.P.M.), veterinary medicine (D.V.M.), chiropractic (D.C. or D.C.M.), law (LL.B. or J.D.), and theological professions (M.Div. or M.H.L.).

First-professional enrollment: The number of students enrolled in a professional school or program that requires at least 2 years of academic college work for entrance and a total of at least 6 years for a degree. By NCES definition, first-professional enrollment includes only students in certain programs. (See *first-professional degree* for a list of programs.)

Full-time enrollment: The number of students enrolled in higher education courses with total credit load equal to at least 75 percent of the normal full-time course load.

Full-time-equivalent (FTE) enrollment: For institutions of higher education, enrollment of full-time students, plus the full-time equivalent of part-time students as reported by institutions. In the absence of an equivalent reported by an institution, the FTE enrollment is estimated by adding one-third of part-time enrollment to full-time enrollment.

Full-time worker: In educational institutions, an employee whose position requires being on the job on school days throughout the school year at least the number of hours the schools are in session; for higher education, a member of an educational institution's staff who is employed full time.

Graduate: An individual who has received formal recognition for the successful completion of a prescribed program of studies.

Graduate enrollment: The number of students who hold the bachelor's or first-professional degree, or the equivalent, and who are working toward a master's or doctor's degree. First-professional students are counted separately. These enrollment data measure those students who are registered at a particular time during the fall. At some institutions, graduate enrollment also includes students who are in postbaccalaureate classes but not in degree programs.

High school: A secondary school offering the final years of high school work necessary for graduation, usually including grades 10, 11, and 12 (in a 6-3-3 plan), or grades 9, 10, 11, and 12 (in a 6-2-4 plan).

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate, baccalaureate, or higher degree.

Higher education institutions (traditional classifications):

4-year institution: An institution legally authorized to offer and offering at least a 4-year program of college-level studies wholly or principally creditable toward a bachelor's degree. A university is a postsecondary institution that typically includes one or more graduate professional schools.

2-year institution: An institution legally authorized to offer and offering at least a 2-year program of college-level studies that terminates in an associate degree or is principally creditable toward a baccalaureate.

Higher Education Price Index: A price index which measures average changes in the prices of goods and services purchased by colleges and universities through current-fund education and general expenditures (excluding expenditures for sponsored research and auxiliary enterprises).

Instructional staff: Full-time-equivalent number of positions, not the number of individuals occupying the positions during the school year. In local schools, it includes all public elementary and secondary (junior and senior high) day-school positions that are in the nature of teaching or the improvement of the teaching–learning situation. Includes consultants or supervisors of instruction, principals, teachers, guidance personnel, librarians, psychological personnel, and other instructional staff. Excludes administrative staff, attendance personnel, clerical personnel, and junior college staff.

Master's degree: A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree. One type of master's degree, including the Master of Arts degree (M.A.) and the Master of Science degree (M.S.) is awarded in the liberal arts and sciences for advanced scholarship in a subject field or discipline and demonstrated ability to perform scholarly research. A second type of master's degree is awarded for the completion of a professionally oriented program, for example, an M.Ed. in education, an M.B.A. in business administration, an M.F.A. in fine arts, an M.M. in music, an M.S.W. in social work, or an M.P.A. in public administration. A third type of master's degree is awarded in professional fields for study beyond the first-professional degree, for example, the Master of Laws (LL.M.) and Master of Science in various medical specializations.

Newly qualified teacher: A person who (1) first became eligible for a teaching license during the period of the study referenced or who was teaching at the time of the survey but was not certified or eligible for a teaching license and (2) had never held a full-time, regular (as opposed to substitute) teaching position before completing the requirements for the degree that brought the person into the survey.

Nonresident alien: A person who is not a citizen of the United States and who is in this country on a temporary basis and does not have the right to remain indefinitely.

Part-time enrollment: The number of students enrolled in higher education courses with a total credit load of less than 75 percent of the normal full-time credit load.

Personal income: Current income received by persons from all sources minus their personal contributions for social insurance. Classified as "persons" are individuals (including owners of unincorporated firms), nonprofit institutions serving individuals, private trust funds, and private noninsured welfare funds. Personal income includes transfers (payments not resulting from current production) from government and business such as social security benefits, military pensions, and so forth, but excludes transfers among persons.

Postbaccalaureate enrollment: The number of graduate and first-professional students working toward advanced degrees and students enrolled in graduate-level classes but not enrolled in degree programs. See also *graduate enrollment* and *first-professional enrollment*.

Private institution: A school or institution that is controlled by an individual or agency other than a state, a subdivision of a state, or the federal government; that is usually supported primarily by other than public funds; and the operation of whose program rests with other than publicly elected or appointed officials.

Property tax: The sum of money collected from a tax levied against the value of property.

Public school or institution: A school or institution controlled and operated by publicly elected or appointed officials and deriving its primary support from public funds.

Pupil–teacher ratio: The enrollment of pupils at a given period of time, divided by the full-time-equivalent number of classroom teachers serving these pupils during the same period.

Racial–ethnic group: A classification indicating general racial or ethnic heritage based on self-identification, as in data collected by the Bureau of the Census, or on observer identification, as in data collected by the Office of Civil Rights. These categories are in accordance with the Office of Management and Budget standard classification scheme presented below:

American Indian/Alaskan Native: A person having origins in any of the original peoples of North America and maintaining cultural identification through tribal affiliation or community recognition.

Asian or Pacific Islander: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Black: A person having origins in any of the black racial groups in Africa. Normally excludes persons of Hispanic origin, except for tabulations produced by the Bureau of the Census.

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

White: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East. Normally excludes persons of Hispanic origin, except for tabulations produced by the Bureau of the Census, which are noted accordingly in this volume.

Revenues: All funds received from external sources, net of refunds and correcting transactions. Noncash transactions such as receipt of services, commodities, or other receipts "in kind" are excluded, as are funds received from the issuance of debt, liquidation of investments, or nonroutine sale of property.

Revenues receipts: Additions to assets that do not incur an obligation that must be met at some future date and do not represent exchanges of property for money. Assets must be available for expenditures.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

School: A division of the school system consisting of students in one or more grades or other identifiable groups and organized to give instruction of a defined type. One school may share a building with another school or one school may be housed in several buildings.

Secondary instructional level: The general level of instruction provided for pupils in secondary schools (generally covering grades 7 through 12 or 9 through 12) and any instruction of a comparable nature and difficulty provided for adults and youth beyond the age of compulsory school attendance.

Secondary school: A school including any span of grades beginning with the next grade following an elementary or middle school (usually 7, 8, or 9) and ending with or below grade 12. Both junior high schools and senior high schools are included.

Senior high school: A secondary school offering the final years of high school work necessary for graduation.

Student: An individual for whom instruction is provided in an educational program under the jurisdiction of a school, school system, or other educational institution. No distinction is made between the terms "student" and "pupil," although 'student' may refer to one receiving instruction at any level while "pupil" refers only to one attending school at the elementary or secondary level. The term "student" is used to include individuals at all instructional levels. A student may receive instruction in a school facility or in another location, such as at home or in a hospital. Instruction may be provided by direct student-teacher interaction or by some other approved medium, such as television, radio, telephone, or correspondence.

Tax base: The collective value of objects, assets, and income components against which a tax is levied.

Total expenditure per pupil in average daily attendance: Includes all expenditures allocable to per pupil costs divided by average daily attendance. These allocable expenditures include current expenditures for regular school programs, interest on school debt, and capital outlay. Beginning in 1980-81, expenditures for administration by state governments are excluded and expenditures for other programs (summer schools, community colleges, and private schools) are included.

Unclassified students: Students who are not candidates for a degree or other formal award, although they are taking higher education courses for credit in regular classes with other students.

Undergraduate students: Students registered at an institution of higher education who are working in a program leading to a baccalaureate or other formal award below the baccalaureate, such as an associate degree.

Statistical Terms

Auto-Correlation: Correlation of the error terms from different observations of the same variable. Also called *serial correlation.*

Degrees of freedom: The number of free or linearly independent sample observations used in the calculation of a statistic.

Dependent variable: A mathematical variable whose value is determined by that of one or more other variables in a function. In regression analysis, when a random variable, y, is expressed as a function of variables x_1, x_2,..., plus a stochastic term, the y is known as the "dependent variable."

Double exponential smoothing: A method that takes a single smoothed average component of demand and smoothes it a second time to allow for estimation of a trend effect.

Durbin-Watson statistic: A statistic testing the independence of errors in least squares regression against the alternative of first-order serial correlation. The statistic is a simple linear transformation of the first-order serial correlation of residuals and, although its distribution is unknown, it is tested by bounding statistics that follow R. L. Anderson's distribution.

Econometrics: The quantitative examination of economic trends and relationships using statistical techniques, and the development, examination, and refinement of those techniques.

Estimate: A numerical value obtained from a statistical sample and assigned to a population parameter. The particular value yielded by an estimator in a given set of circumstances or the rule by which such particular values are calculated.

Estimating equation: An equation involving observed quantities and an unknown that serves to estimate the latter.

Estimation: Estimation is concerned with inference about the numerical value of unknown population values from incomplete data, such as a sample. If a single figure is calculated for each unknown parameter, the process is called point estimation. If an interval is calculated within which the parameter is likely, in some sense, to lie, the process is called interval estimation.

Exogenous variable: Variables for which the values are determined outside the model but which influence the model.

Exponential smoothing: A method used in time series to smooth or to predict a series. There are various forms, but all are based on the supposition that more remote history has less importance than more recent history.

Ex-Ante forecast: When forecasting a dependent variable for some time period t using a model with at least one independent variable, the forecast of the dependent variable is an ex-ante forecast if the values for the independent variables for time period t are themselves not known.

Ex-Post forecast: When forecasting a dependent variable for some time period t using a model with at least one independent variable, the forecast of the dependent variable is an ex-post forecast if the values for the independent variables for time period t are the actual values. Ex-post forecasts are often used in forecast evaluation.

First-Order serial correlation: When errors in one time period are correlated directly with errors in the ensuing time period. Also called *auto-correlation.*

Forecast: An estimate of the future based on rational study and analysis of available pertinent data, as opposed to subjective prediction.

Forecasting: Assessing the magnitude which a quantity will assume at some future point in time: as distinct from "estimation," which attempts to assess the magnitude of an already existent quantity.

Forecast horizon: The number of time periods into the future which are forecasted. Forecasts for next year are said to have a 1-year forecast horizon.

Function: A mathematical correspondence that assigns exactly one element of one set to each element of the same or another set. A variable that depends on and varies with another.

Functional form: A mathematical statement of the relationship among the variables in a model.

Independent variable: In regression analysis, when a random variable, y, is expressed as a function of variables x_1, x_2,..., plus a stochastic term, the x's are known as "independent variables."

Lag: An event occurring at time t + k (k>0) is said to lag behind an event occurring at time t, the extent of the lag being k. An event occurring k time periods before another may be regarded as having a negative lag.

Maximum likelihood estimation: A method of estimating a parameter or parameters of a population by that value (or values) that maximizes (or maximize) the likelihood of a sample.

Mean absolute percentage error (MAPE): The average value of the absolute value of errors expressed in percentage terms.

Model: A system of postulates, data, and inferences presented as a mathematical description of a phenomenon such as an actual system or process. The actual phenomenon is represented by the model in order to explain it, to predict it, and to control it.

Ordinary least squares (OLS): The estimator that minimizes the sum of squared residuals.

Parameter: A quantity that describes a statistical population.

Projection: In relation to a time series, an estimate of future values based on a current trend.

R^2: The coefficient of determination; the square of the correlation coefficient between the dependent variable and its OLS estimate.

$\bar{R}^2$(also called the adjusted R^2): The coefficient of determination adjusted for the degrees of freedom.

Regression analysis: A statistical technique for investigating and modeling the relationship between variables.

Rho: A measure of the correlation coefficient between errors in time period t and time period t minus 1.

Serial correlation: Correlation of the error terms from different observations. Also called *auto-correlation*.

Standard error of estimate: An expression for the standard deviation of the observed values about a regression line. An estimate of the variation likely to be encountered in making predictions from the regression equation.

Time series: A set of ordered observations on a quantitative characteristic of an individual or collective phenomenon taken at different points in time. Usually the observations are successive and equally spaced in time.

Time series analysis: The branch of quantitative forecasting in which data for one variable are examined for patterns of trend, seasonality, and cycle.

Variable: A quantity that may assume any one of a set of values.

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